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The CHEMIST AND DRUGGIST

for RETAILER - WHOLESALER - MANUFACTURER

Established 1859

28 Essex Street, Strand, London, W.C.2

Registered as a Newspaper

No. 3053
VOL. CXXIX

AUGUST 13, 1938

Annual Subscription (with
Diary) 20/- Single Copies 9d.

HOT WATER BOTTLES

that will increase your sales!

The name DUNLOP, world-famed for service and satisfaction, is your finest assurance for rapid and easy selling of these quality hot water bottles. They are made in styles and prices to suit every customer . . . they are backed by National advertising. Order your stocks now.

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Fixed Retail Price **2/11**New type, with handle **3/3**

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Uncovered, each **3/11**

Covered in velvet, each **5/9**

"RED RIDING HOOD," including red head cover
each **4/6**

- DUNLOP MOULDED FABRIC INSERTION BOTTLE
New type, with handle **4/6**

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In white from **4/6** In red, from **4/11**

- DUNLOP COSIMAX. An entirely new kind of hot water bottle
Standard size **10/6**

Senior size **14/11**

Specially shaped Cosimax Footwarmer

10/6

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ALL-RUBBER
MOULDED BOTTLE

2/11

In Red only.

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HOT WATER BOTTLES

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C.F.R.

Index to Advertisers, pp. 5 & 6.

EDUCATIONAL NUMBER



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Your Christmas begins on **AUGUST 25!**

(That's when the Coty Showrooms commence)

DECEMBER 25th may be Christmas Day. But for perfume buyers, Christmas really begins on August 25th.

BEFORE YOU MAKE UP YOUR CHRISTMAS ORDERS be sure to see the Coty Show, commencing at Coty House on August 25th, with special displays in the towns listed below. If you can't get along, write for full details.

Last year many dealers built new Christmas sales records with Coty Coffrets and gifts. This year they are still more attractive — lovelier, more exciting, more varied than ever before.

DATES	TOWN	HOTEL	REPRESENTATIVE
From Aug. 25th . . .	LONDON	COTY HOUSE	HEAD OFFICE
Aug. 29th-Sept. 2nd . . .	BELFAST	GRAND CENTRAL	A. McCONNOCHE
Aug. 29th-Sept. 2nd . . .	LIVERPOOL	ADELPHI	L. A. BULLEN
Aug. 29th-31st . . .	BRADFORD	MIDLAND	M. W. DUNNE
Sept. 5th-9th . . .	MANCHESTER	MIDLAND	G. HOWELLS
Sept. 5th-10th . . .	LEEDS	GT. NORTHERN	M. W. DUNNE
Sept. 5th-14th . . .	GLASGOW	ST. ENOCH	A. McCONNOCHE
Sept. 12th-17th . . .	NEWCASTLE	STATION	M. W. DUNNE
Sept. 19th-21st . . .	HULL	GROSVENOR	M. W. DUNNE
Sept. 19th-23rd . . .	ABERDEEN	PALACE	A. McCONNOCHE
Sept. 12th-16th . . .	BIRMINGHAM	QUEENS	A. C. E. REVELL
Sept. 27th-Oct. 1st . . .	PLYMOUTH	WESTMINSTER	W. H. SCOREY
Sept. 26th-30th . . .	EDINBURGH	NTH. BRITISH	A. McCONNOCHE
Sept. 27th-29th . . .	LEICESTER	GRAND	C. W. HELLARY
Oct. 3rd-4th . . .	PERTH	SALUTATION	A. McCONNOCHE
Oct. 3rd-6th . . .	NOTTINGHAM	VICTORIA STN.	W. N. POTTER
Oct. 3rd-7th . . .	CARDIFF	ROYAL	J. FLOOK
Oct. 3rd-7th . . .	BRIGHTON	METROPOLE	E. PHILLIPS
Oct. 5th-7th . . .	INVERNESS	STATION	A. McCONNOCHE
Oct. 5th-6th . . .	SOUTHAMPTON	ROYAL	W. H. SCOREY
Oct. 11th-13th . . .	COVENTRY	KING'S HEAD	A. C. E. REVELL
Oct. 11th-14th . . .	BRISTOL	ROYAL	J. FLOOK
Oct. 10th-14th . . .	DUNDEE	ROYAL BRITISH	A. McCONNOCHE
Oct. 11th-13th . . .	SOUTHSEA	ROYAL PIER	E. PHILLIPS
Oct. 18th-22nd . . .	SOUTHEND	PALACE	C. W. HELLARY
Oct. 18th-22nd . . .	BOURNEMOUTH	GRAND	W. H. SCOREY
Oct. 18th-20th . . .	SWANSEA	METROPOLE	J. FLOOK
Oct. 25th-29th . . .	HANLEY	GRAND	W. N. POTTER
Oct. 26th-28th . . .	EXETER	ROUGEMONT	W. H. SCOREY

Coty



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Nº D.16

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ROYAL ALBERT HALL, LONDON
SEPTEMBER 19th to 23rd, 1938

CADBURY BROS. LTD., BOURNVILLE

INDEX TO ADVERTISERS

Aerograph Co., Ltd. (DeVilbiss Atomisers) xv	Cadbury Bros. (Diabetic Chocolate) ... 4	Gale, Baiss & Co., Ltd. (Pharmaceutical Preparations, &c.) ii
Allen, Stafford, & Sons, Ltd. (Gum Acacia) 5	Calvert, F. C., & Co., Ltd. (Tooth Powder) 26	George, Ernest J., & Co. (Valuers, &c.) Col. Supp.
Annis Medical Agency (Valuers, &c.) Col. Supp.	Cannon Rubber Manfrs., Ltd. (Hot Water Bottles) xi	Glasgow Royal Technical College 16
Armstrong Cork Co., Ltd. (Corks) ... xiv	Cardiff Technical College 19	Gower, John (Books) 19
Aspro, Ltd. (Aspro) vii	Cartwright, W. B., Ltd. (Moorland Indigestion Tablets) 6	Graesser, N. H. (Phenol B.P., &c.) ... iii
Association of Manufg. Chemists, Ltd. Col. Supp.	Chelsea School of Pharmacy 14	Graesser Salicylates, Ltd. (Salicylates) iii
Aurum Ambrosium, Ltd. (Rheumatism Treatment) xiv	Chemical Workers' Union, The Col. Supp.	Grime's Manchester Tutorial College 12
Ayrton, Saunders & Co., Ltd. (Wholesale Druggists) Cover iv	Chemist and Druggist, The 11, 21, xii, Leader Page	Hackett, S. E. (Film Overstocks) Col. Supp.
Barker, R. W., & Co. (Patent Agents) xii	Cooper, McDougall & Robertson, Ltd. (Vermin Powder, &c.) 7	Hadfield, Henry, Ltd. (Bottle Boxes) viii
Bayer Products, Ltd. ('Adalin') Leader Page	Cooper, Son & Co., Ltd. (Cachets) ... xiv	Harris, Hart & Co., Ltd. (Epsom Salts, Glauber Salts, &c.) ii
Beatson, Clark & Co., Ltd. (Non-Drip Bottle) 8	Coty (England), Ltd. (Christmas Displays) 2	Harris Institute 12
Bell, John, Hills & Lucas, Ltd. (Travel Sickness Remedy) Leader Page	Cox, A. H., & Co., Ltd. (Pills and Tablets) 8	Hedley, T., & Co., Ltd. (Glycerine) iv
Berdoo & Fish (Valuers, &c.) Col. Supp.	Cresswell Bros. (Sponges) xii	Heriot-Watt College 15
Birmingham Central Technical College 16	Davey & Moore (Non-Drip Bottles) ... 8	Heward, R. H., & Co. (Surgical Appliances) Cover iv
Blyton, Astley & Co., Ltd. (Lozenges, &c.) xii	Dick, W. B., & Co., Ltd. (Liquid Paraffin) v	Hewlett, C. J., & Son, Ltd. (Insect Bite Cream, &c.) iv
Bourjois, Ltd. ("Evening in Paris" Perfumery, &c.) 3	Dndley & Co., Ltd. (Shop Fittings) ... 28	Hill, Thos., Engineering Co. (Hull), Ltd. (Bottle Washing Machinery) ... 20
Bradford Technical College 17	Dnke Pharmaceutical Co. (Plastrodine) xii	Hobson, Trimble & Co., Ltd. (Feet Plaisters, &c.) xii
Brighton Technical College 15	Dunlop Rubber Co., Ltd. (Hot Water Bottles) Front Cover	Hosezene Co., Ltd., The (Sanitary Towels) ix
British Optical Institute, Ltd. 18	Ebe Products, Ltd. (Bath Powders) xiii	Hubbuck, T., & Son, Ltd. (Oxide of Zinc) v
Brook, Parker & Co., Ltd. (Tablets, Pills, &c.) xii	Educational Institute of Scotland 17	Huddersfield Technical College 17
Buckley-Bowker Tablet Co., Ltd. (Tablets, &c.) viii	Edwards Harlene, Ltd. (Hair Toilet Preparations) 24	Ilford, Ltd. (Selo) Cover ii
Burgoyne, Burbidges & Co., Ltd. (Galenicals, &c.) i	Everett, S. & R. J., & Co., Ltd. (Hypodermic Needles) ix	International Bottle Co., Ltd. 8
Burrough, James, Ltd. (Alcohol for Perfumery) Leader Page	Exeter University College 12	Josephs, Philip, & Sous, Ltd. (Shop-fittings) Col. Supp.
Burroughs Wellcome & Co. (Sulphonamide-P, &c.) 27	Fennings, A. (Children's Cooling Powders) Leader Page	Lauder, L. T. (Filling Machines) ... xiv
	Foyles Libraries, Ltd. (Books) 19	Leeds College of Technology 17
	Fromm, Herbert (Frommug Price Reductions) xvi	

[Continued overleaf.]

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INDEX—cont.

Leicester College of Technology	11	Perry & Hope, Ltd. (Phosphate of Soda)	xii	Southalls (Birmingham), Ltd. (Sanitary Towels, &c.)	23, iv, ix
Levermore, A., & Co., Ltd. (Precipitated Chalk)	xii	Pharmaceutical Lanoline Co. (Lanoline)	vi	Southampton University College	12
Liverpool School of Pharmacy	13	Pifco, Ltd. (Sharpex Blade Sharpener)	xii	South of England College of Pharmacy	11
Locker, Thomas, & Co., Ltd. (Locker-Waytrol)	x	Pitman, Sir Isaac, & Sons, Ltd.	19	Standard Synthetics, Ltd. (Pure Essential Oils)	ii
Lofthouse & Saltmer, Ltd. (Halibut Liver Oil)	xiv	Plymouth Technical College School of Pharmacy	14	Sterns, Ltd. (Petroleum Jellies, &c.)	iii
London College of Pharmacy	10	Polytechnic, The	17	Stockport College	11
L.C.C. Norwood Technical Institute ...	10	Potter & Clarke, Ltd. (Wholesale Druggists)	9, 25	Summer's Ty-phoo Tea, Ltd. ...	Leader Page
Manesty Machines, Ltd. (Tablet Machines)	22	Premier Oil Extracting Mills, Ltd. ...	ii	Sunderland Technical College	12
Matthews, D., & Son, Ltd. (Shopfittings)	Col. Supp.	Prescriber, The	19	Tomlinson & Hayward, Ltd. (Eureka Weed Killer)	Leader Page
Mawdsley, D., & Co. ('Prophecies')	viii	Purfinol, Ltd. (Liquid Paraffin, &c.) ...	viii	Tonicity Laboratories, Ltd. (Animag Tonic for Dogs)	vi
Merchant Venturers Technical College ..	14	Robert Gordon's Technical College	17	United Glass Bottle Manufacturers, Ltd. (Bottles, &c.)	1
Methylating Co., Ltd. (Methylated Spirit)	28	Roberts' Patent Filling Machine Co., Ltd.	x	University of Leeds	14
Monsanto Chemicals, Ltd. (Phenacetin) ..	Cover iii	Rouse Bros. (London), Ltd. (Packed Powders)	ix	University of Manchester School of Pharmacy)	16
National Association of Opticians	18	Royal Dental Hospital of London School of Dental Surgery	20	Vines (Biocrii Pomade Shampoo Treatment)	Leader Page
National Glass Works (York), Ltd. (Bottles)	xi	Rudduck & Co. (Shopfittings) ...	Col. Supp.	Walden & Co. (Nufix), Ltd. (Nufix) ...	22
National School of Chiropody	20	St. Andrew's University	15	Westminster College of Pharmacy ...	11
Neill, J., & Co. (Sheffield), Ltd. (Belipse Razors, &c.)	26	Salford Royal Technical College	16	Wilson & Mansfield, Ltd. (Eucalyptus Oil, &c.)	xiv
Newhall & Mason, Ltd. (Extract of Herbs)	vi	Samona, Ltd. (Samona)	xv	Wolverhampton and Staffordshire Technical College	12
Newmark, M., & Co. (Toothbrushes) ..	iv	School of Surgical Chiropody	12	Woolwich Polytechnic	17
Old Strand Chemical & Drug Co., Ltd. (Pharmaceutical Chemicals, &c.) ...	xii	Scientific Glass Blowing Co.	18	Worshipful Company of Spectacle Makers	20
Ormerod Engineers, Ltd. (Q.P. Emulsifier)	x	Scott & Turner, Ltd. (Andrews Liver Salt)	xiv	Yestamin Co. (Dried Yeast Powder and Tablets)	xii
Orridge & Co. (Valuers, &c.) ...	Col. Supp.	Scurr, C. A. (Optical Tuition)	18	Zeal, G. H., Ltd. (Clinical Thermometers)	Cover iv
		Sharplin, W. J., Ltd. (Stoppers)	20		
		Simpkin, A. L., & Co., Ltd. (Glucose Confections)	vi		
		Singleton & Cole, Ltd. (Tobacco, &c.) ...	xii		
		Sir John Cass Technical Institute	10		
		Solazzi Liquorice	Cover iv		
		Solport Bros., Ltd. (Toilet Requisites)	26		

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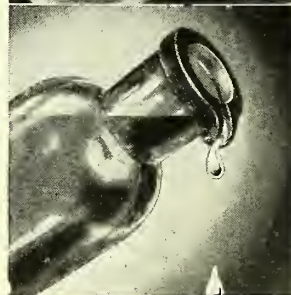
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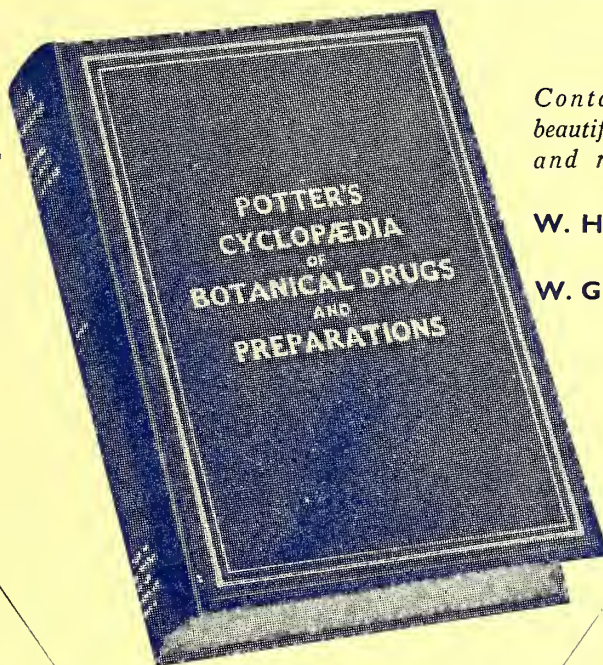
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SESSION 1938-9

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SESSION 1938-39

Commencing 3rd October, 1938

The following Full-time (Day) Courses in preparation for the Examinations of the Pharmaceutical Society, the University of Wales, and the University of London will commence in October next:—

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- A two years' Course leading to the Pharmaceutical Chemist Qualifying Examination and to the Final Examinations for the Degrees of Bachelor of Pharmacy of the University of Wales and of the University of London.**
- A special one year (nine months) Course leading to Pharmaceutical Chemist Qualifying Examination. Only those students who attended the Chemist and Druggist Course in the College and have passed the Qualifying Examination are eligible to enter this Course.**
- A course preparing for the Assistants' Examination of the Society of Apothecaries.**

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For further particulars of Full-time and Part-time Courses, Scholarships, fees, etc., apply to the Principal. Application Forms for Entrance Scholarship Examination, duly filled up, must be received before 15th September, 1938.

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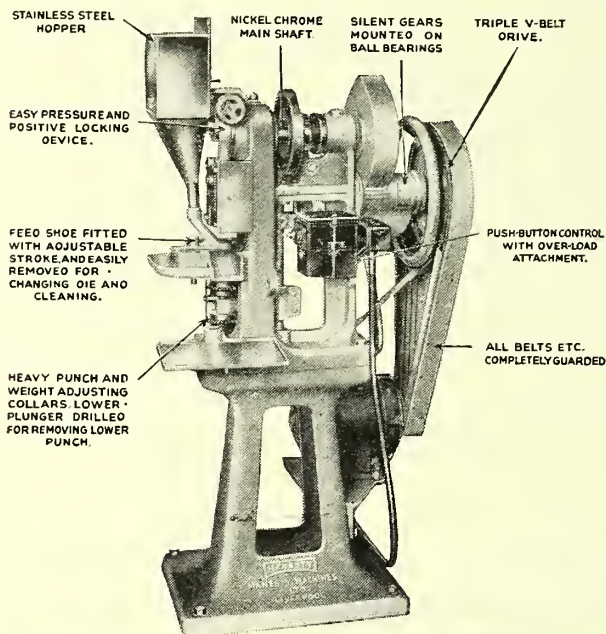
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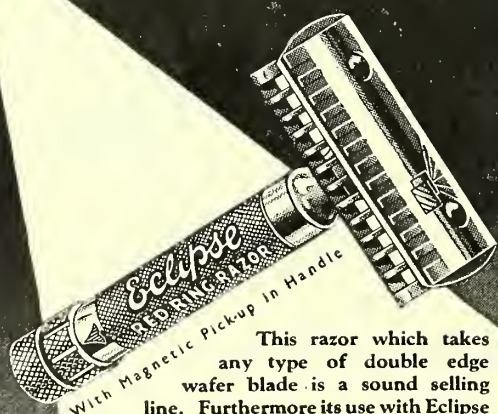
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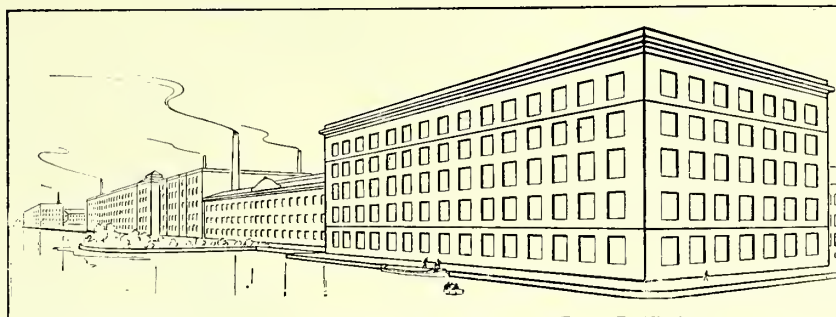
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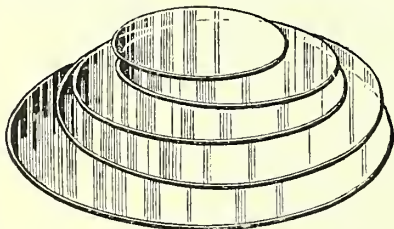
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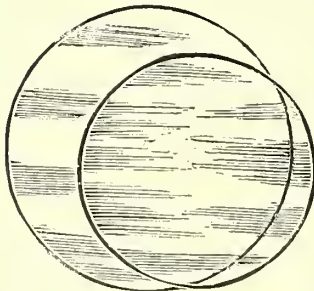
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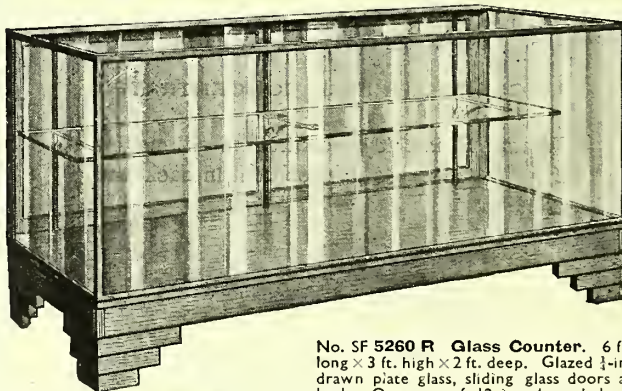
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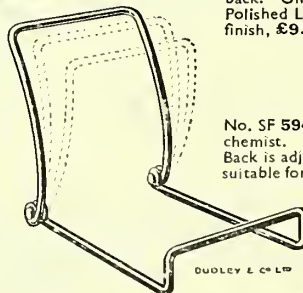
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News of the Week

Business Changes

MR. A. T. WILLIS, M.P.S., has acquired the business of Mr. William A. Shakerley, M.P.S., 121 Clapham Park Road, London, S.W.4, who is retiring.

THE PETERBOROUGH CO-OPERATIVE SOCIETY, LTD., will shortly be opening a branch pharmacy in Westgate, Peterborough.

Trade Board for Rubber Industry

Resulting from a request by the firms in the trade, supported by the unions, the Minister of Labour has decided to establish a Trade Board for the rubber manufacturing industry. The Board, which will consist of representatives of employers and workers and three independent members, will fix minimum wage rates for all factories solely concerned with the manufacture of rubber materials, but will not affect waterproof clothing.

Drug Trade Appeal Fund

The biennial meeting of subscribers to the Drug Trade Appeal Fund was held on July 25 in the board room of The British Drug Houses, Ltd., Graham Street, City Road, London, N.1, by courtesy of the managing director, Mr. C. A. Hill, who presided.

The biennial report was adopted. It indicated that the trustees had had no applications for assistance nor any request to undertake an appeal during the past two years. The financial statement and balance sheet, which was adopted, shows a total income for the two years of £50, with excess of income over expenditure £26. The following trustees for the period 1938-40 were elected:—Messrs. C. A. Hill, D. Lloyd Howard, L. O. Johnson, John Keall, Thomas Marns, A. R. Melhuish, and E. T. Neathercoat. A resolution of thanks was passed to the editors and publishers of the trade papers for help and publicity since inauguration of the Fund. The trustees held a meeting immediately after the meeting of subscribers, when Mr. C. A. Hill was re-elected *Chairman*, Mr. L. O. Johnson *Treasurer*, and Mr. Arthur Mortimer *Secretary*, for the ensuing two years.

Disinfection of Respirators

In the memorandum issued by the Air Raid Precautions Department of the Home Office on the distribution of respirators to the public, Paragraph 13 states: "Particular care should be exercised by air raid wardens to ensure that after each fitting the respirator is disinfected. The normal method laid down involves the use of formalin because, unlike other disinfectants, it does not possess properties which are harmful to the window of the respirator. The time taken to disinfect by formalin is, however, considerable, and other satisfactory disinfectants can be used for this purpose. . . ."

In that paragraph it is advised that lysol should be used for

the disinfection of respirators during fitting trials in the strength of five parts of lysol to one hundred parts of water. When the earlier edition of this memorandum was issued in duplicated form in April, the strength for lysol was erroneously given as twenty parts of lysol in one hundred parts of water. Although no case of complaint is known to have arisen, it is considered possible that a solution of lysol of this strength might leave a residue in the facepiece which might be unpleasantly irritant to anyone wearing the respirator, and attention is drawn to the correction.

Blackburn

COUNCILLOR W. E. WOOLLEY, J.P., M.P.S., has been re-elected as a candidate for St. Mary's Ward, Blackburn, in the November municipal elections.

A.R.P. LECTURES.—Members of the North-East Lancashire Branch of the Pharmaceutical Society who signified their interest in air-raid precautions have been notified that arrangements have been made which will enable chemists identified with the branch to attend a series of lectures on A.R.P., to be given by the Blackburn Police Department, at the Sessions House, Blackburn, on Thursday afternoons during August. The first lecture dealt with the dispersal of gas, bombs, shells, etc.; the second concerns respirators, including a test in the gas chamber; and the last with general organisation. They will be followed by a course in first aid appertaining to A.R.P.

Leamington

N.P.U. MATTERS.—The Warwickshire Branch of the National Pharmaceutical Union met at Leamington Spa on July 28, Mr. F. Wooddisse presiding. The secretary reported on the recent visit to the works of Ucal, Ltd., Cheltenham. Certain matters relating to the supply of Chemists' Friends goods to general stores; admission to the C.F. Sellers' List by engagement of qualified chemists to take charge of drug departments; window shows of C.F. goods in the county areas, etc., were referred for further information. The new advanced prices for supply of medicinal oxygen were discussed.

WARWICKSHIRE PHARMACEUTICAL COMMITTEE.—At a meeting of the Pharmaceutical Committee on July 28, the secretary was directed to forward a message of sympathy to relatives of the late Mr. C. E. Ison, Atherstone, who had been a member of the Committee since its inception. The question of co-opting a pharmacist in Mr. Ison's place was deferred. The secretary reported as to payment of a claim for oxygen on a panel prescription; an assurance was given from the Pricing Office that in every case of disallowment or deduction from a chemist's claim the claimant was communicated with. The Committee expressed

CONTENTS

See p. 153

concern at the continued increase in the cost of dispensing—the cost per prescription continuing at 8.2d., an advance per insured person to 3.0d. per month. Out of a number of tests of medicine and appliances reported upon, there were no inaccuracies.

London

PRESENTATION.—A set of pierced silver fruit dishes and sundae cups was presented by employees to Mr. Wilfrid Hill (chairman and managing director, County Perfumery Co.) at the company's premises, North Circular Road, London, on July 27, on the occasion of his 70th birthday.

ENFIELD CHEMISTS' MEETING.—A meeting of the Enfield and District Chemists' Association was held on July 28, the chairman (Mr. A. R. Cross) presiding. Mr. W. E. James (Glaxo Laboratories) addressed the members on "The Vitamins and the Hormones of the Pituitary Body." Mr. James described the preparation and action of the various vitamins, and showed samples of the pure vitamins. It was suggested that a deficiency of vitamin E is a cause of abortion. The chairman thanked Mr. James for a most interesting lecture, and the latter replied, also answering many questions. The secretary announced there would be an outing in the middle of September and requested the names of members wishing to take part.

Miscellaneous

HORLICK'S GALA PERFORMANCE.—To mark the two hundredth Horlick's hour "on the air," a gala performance was held on August 5, when many of the stars who had appeared in these programmes in the past were present. This performance was broadcast from the Scala Theatre, London, and is part of the advertising scheme to promote the sale of Horlick's malted milk produced by Horlick's, Ltd., Slough, Bucks.

IN THE COURTS.—At Burnley Quarter Sessions, on August 4, James A. McGough was sentenced to six months' imprisonment for malicious damage to a plate-glass window at the premises of Taylors' Drug Co., Ltd., St. James Street.—At Marylebone (London) Police Court, on August 6, Patricia Mallory, who pleaded guilty to four charges of obtaining or attempting to obtain the dangerous drug, omnopon, and admitted twenty-two other cases of obtaining the drug by means of forged prescriptions, was again remanded for arrangements to be made for her to go into a hospital under the care of a specialist. When the hearing of the case was resumed on August 10 the accused was sentenced to four months in the second division.—At Bourne (Lincs), on August 4, a fine of £1 was imposed on Cyril H. M. Baxter, M.P.S., trading as Mills & Baxter, for supplying eight ounces of laudanum to a person not authorised to be in possession of it.

PHARMACY ACT CASES.—At Keighley Police Court, on August 8, Sarah Smith, secretary of John F. Smith (Highfield), Ltd., Keighley, was charged with unauthorised sale of a poison, the use of the description "pharmacy" and the use of the title "chemist." A fine of £2 was imposed for the sale of the poison and £1 on each of the other summonses.—At Bolton Police Court, on August 8, The Spa Drug Co., Deane, Bolton, were prosecuted for the unlawful sale of ephedrine in a proprietary tablet and further because the package was not properly labelled. The company pleaded guilty. G. C. Hull, secretary and managing director, stated that the packets came to the stall from a bankrupt chemist's stock he purchased. Fines amounting to £6 were imposed.

Irish Notes

Irish Drug Association

Mr. P. A. Brady (president) was in the chair at a meeting of the Committee of the Irish Drug Association held on July 25. A letter was read from Mr. F. Loughman, T.D., thanking the Association for congratulations on his election to the Dail, and promising to assist the Association whenever the occasion arose. A member who inquired whether a single subscription to the Association covered a parent house and branch was informed that a subscription must be paid in respect of each open shop. The Committee decided to approach the Department of Industry and Commerce pointing out the great inconvenience caused to members by some of the provisions in the Shops (Conditions of Employment) Act,

1938, and to ask for certain exemptions. It was pointed out that, if these exemptions were not granted, members would have to make such alterations as would result in curtailment of the medical services provided by chemists' shops. Demands were received from the Irish Union of Distributive Workers and Clerks for compulsory membership, for apprentices' wages ranging from £1 a week upwards, no Sunday or holiday work, and no work after 6 p.m. The Committee decided that no agreement on these lines could be reached. The Association, it was reported, was still in communication with the United Drug Co., Nottingham, on the subject of "penny sales" (see *C. & D.*, July 9, p. 29). A report of the recent conference between the retail and wholesale sections of the Association was before the meeting. At the conference the position in relation to the Package Tax was discussed. The question of wholesalers supplying nursing homes, the medical profession and so forth was deferred until retail representatives could supply definite proposals and evidence. Accordingly members are requested to report to the secretary any cases of wholesalers and manufacturers supplying institutions direct or supplying people not strictly entitled to wholesale terms. A long discussion took place on the approved list of manufacturers and wholesalers, wholesale representatives suggesting that more support should be given to approved firms, and that firms not co-operating by restricting their business to chemists and druggists should not receive any of the retailers' business. It was agreed that supplies of approved lines would be refused if requested. A suggestion that "returns" should be credited at the price charged less 5 per cent. (except in cases of genuine error) was agreed. It was decided that more co-operation would be shown in future in all matters, particularly fixing and altering of prices, and that a joint notice regarding the Package Tax would be circulated to the trade.

Miscellaneous

BUSINESS CHANGE.—Mr. R. A. Mackintosh, Ph.C., 18 Church Lane, Belfast, is removing shortly to larger premises in High Street.

Mr. J. K. WHELEHAN, member of the Council of the Pharmaceutical Society of Ireland, is at present on a tour of the south of Ireland.

SENATE ELECTION.—A correspondent writes: "Messrs. B. P. Hickey and P. C. Cahill, the candidates nominated by the Pharmaceutical Society of Ireland for the Senate election in Eire, are gaining a good deal of support in the country districts and in Dublin."

Scottish Notes

Edinburgh

FIRE AT WAREHOUSE.—A fire broke out in the warehouse of R. Findlater & Sons, Gillespie Street, Edinburgh, on July 30, and caused considerable damage to the stock.

NEW BRANCH OPENED.—Leith Provident Co-operative Society, Ltd., have recently opened a branch pharmacy at Crewe Road, Leith.

Miscellaneous

RETIREMENT.—Mr. Joseph Donald, M.P.S., Campbeltown, has retired from business, and is now residing at Springbank, Campbeltown.

A.R.P. ARRANGEMENTS.—Dunfermline chemists are to give the local A.R.P. authorities their co-operation on the possible help they could render in an air raid emergency.

BUSINESS CHANGE.—Mr. A. K. Patrick, M.P.S., has acquired the two businesses formerly carried on at 82 Main Street and 36 Carron Road, Bainsford, Falkirk, by the late Mr. D. P. Grassam, chemist and druggist.

WINDOW DISPLAY CONTEST.—Mr. D. C. Hyslop, St. Cuthbert's Co-operative Association at 171 Piersfield Terrace, Edinburgh, was responsible for the window display which won a prize in the *Dail Mail* "Show and Sell" contest recently.

DISPENSARY APPOINTMENT.—Miss J. J. Petrie has been appointed to succeed Miss A. B. Mitchell as resident dispenser and superintendent of the Inverness Forbes Dispensary.

Imperial and Foreign News

Czechoslovakia

PRAGUE AUTUMN FAIR.—The autumn fair will be held from September 2 to 11. Buyers travelling to the Fair will be granted a 50 per cent. fare reduction in Czechoslovakia and considerable facilities on other European railway, shipping and air lines.

Canada

ADDRESS BY A.P.H.A. PRESIDENT.—Speaking at Toronto, recently, Mr. J. Lern Laskoff, Phar.D., Sc.D. (president, American Pharmaceutical Association), expressed the view that the time was approaching when real pharmacies would be separated from the general-merchandise type of drug store. In one group would be the professional pharmacies, working closely with the medical profession, and on the other side the stores which had few prescriptions to compound, and which would concentrate on the multitude of sidelines which had little or nothing to do with real pharmacy. He did not suggest that it would be possible for pharmacists to operate with prescription business alone. In addition to items such as sickroom and hospital supplies, biologicals, vitamins, ampoules, etc., it was fitting for the professional pharmacist to deal in baby foods and

other baby items, tooth brushes and tooth pastes, and in virtually anything that was taken internally or applied externally in the treatment of illness or in the maintenance of good health and good appearance.

Malta

DEATH OF VALLETTA PHARMACIST.—Mr. Carmelo Callus, Ph.C., died at Valletta on July 23, aged forty. Mr. Callus was the proprietor of the White Cross Pharmacy.

U.S.A.

U.S.P. SUPPLEMENT.—It is planned that the second Supplement to the United States Pharmacopœia XI will appear on January 1, 1939, and it is expected that it will give official recognition to a number of important recently approved medicines. To keep the Pharmacopœia up to date regarding new medicinal products, as well as in assay methods and standards, will thus be the main object of the "Supplement Plan"—a scheme devised for revision of the U.S.P. by supplements.

Topical Reflections

By Xrayser

Bad Debts

The formation by the Withington Chamber of Trade of what is described as a bad debt bureau (*C. & D.*, August 6, p.117) is one of those services that local bodies are in a position to render, other things being equal, more effectively than national bodies. The more it becomes known that such institutions exist, the greater will be the security of the trader against all but the most cunning of defaulters. In Victorian days the retailer was not well safeguarded in the matter of having to write off various sums in his ledger as losses: such knowledge of the financial standing of his booking customers as he acquired was usually picked up in occasional conversation with other business men in the district. Among the bad traditions persisting in this country over a very long period is that of not paying one's tradespeople in full. In "The School for Scandal" Careless and Charles Surface are made to say jointly that "tradesmen are the most exorbitant fellows . . . and paying them is only encouraging them." That pronouncement, of course, is not intended to be read as a confession of faith; but well-to-do customers with accounts have been known to take up the position that they are paying more than cash customers, and may as well take their time over it. I remember people who never paid the whole of an account at one time, but left, say, 25 per cent. of the amount to be carried forward. One professional man with whom I had dealings went into the shop of a firm who had distrained upon him and admitted their right to do so without the smallest sign of embarrassment, shaking hands with one of the partners as he spoke. This type of arrears falls short of being a bad debt; but it may at any time become one, and even if not it is a constant source of trouble.

The Little More

Ammonium carbonate is, like its notorious companion spirit of nitrous ether, a substance that by reason of instability should not be included in a test prescription. Do I read aright, however, that "a chemist generally put a little more in than was expected to be put in, to prevent any deficiency" (p. 122)? A certain general practitioner of the 'eighties, when dictating prescriptions in a pharmacy, used occasionally to pause and add: "A good two drachms"

(or whatever the quantity was). That habit, in the circumstances, was not without its amusing feature; but to raise it to a principle is another matter. Once we leave weights and measures behind and enter the region of guesswork, it is difficult to foresee the consequences. In view of the possibility of further tests of a similar nature, it would be well for some responsible body to issue fresh guidance on the storage and dispensing of ammonium carbonate. A few years ago we were given two contrary pieces of advice regarding this substance: first we were told never to keep it in a stock solution for dispensing, and then, a little later, that the solution was more stable than the dry salt. (I trust I have remembered these precepts in the right order.) In any case, the position seems to need further elucidation. Perhaps someone can tell us briefly, officially or otherwise, what we want to know about it.

Poisonings in Criminology

Your brief account on p. 124 of Sir William Willcox's recent lecture on "Toxicology with Reference to its Criminal Aspects" whets the appetite for more, as its author has accumulated a good deal of experience of poisoning in the criminological sphere. The Donellan case, to which he referred among others, was reported at considerable length in the "Public Advertiser" of April 2, 1781: the defendant was a man of some social position, and the proceedings attracted public attention accordingly. The prevailing impression left on my mind after reading that report was the incompleteness of the evidence, even when one considers the exigencies of reporting and sub-editing. Judged by present-day standards, the "scientific proof" to which Sir William referred was almost non-existent. I see no mention in the paper of the equally, or perhaps more, famous case of Miss Blandy, who early in 1752 was convicted of murder by "white arsenick." Not till about the middle of the eighteenth century did mention of fatal poisonings, accidental or other, become frequent in London newspapers: we may thus presume that every such event had then the fascination of the unusual. It is not improbable that manuscript records of poisonings of that period, of a more detailed kind than those we possess, are in existence in private hands; and it may be suggested that some of them may with advantage be released for scientific study.

Legal Reports

Application for injunction.—In the Vacation Court, on August 10, Mr. Justice Morton granted an *ex parte* application on behalf of Lanilol, Ltd., for an injunction over next Wednesday to restrain Mr. Gordon Oliver from offering for sale, and passing off under the style of Lanilol or in any way calculated to lead to confusion, an ointment for use on the scalp. It was stated that the plaintiffs' trade mark was registered in 1933 and that the defendant had since May 1938 been offering Lanilol for sale as an ointment dealing with sores and ulcers, including those in the head. Mr. Justice Morton said a *prima facie* case of confusion had been made out for an *ex parte* injunction and granted leave to serve notice of motion with the writ for Wednesday, August 17.

Alleged false trade description.—At the West London Police Court, on August 10, before Mr. Paul Bennett, the London Co-operative Society, Ltd., were summoned for selling "the contents of a bottle to which a false trade description was applied, to wit, 'pure halibut-liver oil guaranteed' contrary to the Merchandise Marks Act, 1887." Mr. F. S. Laskey, prosecuting for British Colloids, Ltd., proprietors of Crooke's halibut-liver oil, said the ground of the complaint was that the preparation sold by the defendants was not as described, pure halibut-liver oil, but, it was contended, contained a proportion of whale oil. There was a good deal of correspondence before proceedings were taken, and it was pointed out to the defendants that there were certain Norwegian firms who were preparing spurious oils and selling them to unsuspecting purchasers. The defendants replied that their suppliers guaranteed their product as pure halibut-liver oil without any admixture of any other fish oil. The prosecution, however, would prove by spectroscopic tests that there were contents of whale oil. Mr. Glyn Jones (defending) said they were not prepared to accept spectroscopic tests as reliable. Defending counsel also said he thought it desirable that the Norwegian suppliers should have an opportunity of being represented. They had not had that opportunity, because the summons was not served until July 29. Evidence was given by Mr. R. H. M. Haynes, a chemist employed by the complainants, who produced spectrographs, which, he said, showed that the preparation contained some proportion of whale oil or a concentrate of it. In his opinion the preparation could not properly be described as pure halibut-liver oil. In cross-examination he agreed that halibut-liver oil was a comparatively new product. The only reference to it was in the British Pharmaceutical Codex, and no mention was made there of spectroscopic tests. The hearing was adjourned to September 21.

Company News

P.C. means Private Company and R.O. Registered Office

S.S. DISTRIBUTORS, LTD. (P.C.).—Capital £100. Objects: To carry on the business of manufacturers of and dealers in cosmetics, drugs, chemicals, etc. R.O.: 70A Basinghall Street, E.C.2.

E.F.U., LTD. (P.C.).—Capital £100. Objects: To carry on business as manufacturers of and dealers in chemicals, drugs, patent medicines, etc. Allen M. Horsburgh, "Stairways," Aylesbury, director. R.O.: 104 High Street, Tewkesbury, Glos.

PROCESS PATENTS, LTD. (P.C.).—Capital £200. Objects: To carry on the business of chemical, optical and photographic manufacturers and manufacturers of cellulosic and other plastic materials, etc. R.O.: Devcreux Chambers, Temple, W.C.2.

EDWIN SLATER (CHEMISTS), LTD. (P.C.).—Capital £200. Objects: To acquire the business of a retail chemist and pharmacist carried on by Laura Slater at Kingswinford, Staffs, and to adopt an agreement with Laura Jordan. R.O.: 24 Market Street, Kingswinford, Staffs.

MILK BATHS, LTD. (P.C.).—Capital £100. Objects: To carry on the business of dispensers, manufacturers and dealers in preparations for milk, medical and beauty baths, and pharmaceutical preparations, etc. Edgar M. Stern, 4 Monkville Avenue, Golders Green, N.W.11, director.

NUTTALLS (CHEMISTS), LTD. (P.C.).—Capital £2,000. Objects: To acquire the business of a chemist and optician carried on by J. J. Nuttall at Church Street Pharmacy, Staveley, near Chesterfield. The directors are Nellie M. Illingworth and Herbert Illingworth. R.O.: As above.

EYE-GENE Co., LTD. (P.C.).—Capital £100. Objects: To enter into an agreement to acquire from Mortimer Bryans the benefit of his registered application for a trade mark in respect of goods in which the company proposes to deal, and to carry on the business of chemists, druggists, opticians, etc. R.O.: 2 Clements Inn, Strand, W.C.2.

DENGERM, LTD. (P.C.).—Capital £100. Objects: To acquire trade mark "Dengerm," numbered 533116 in Class 2, and 517148 and 533117 in Class 3, registered in the name of John Geo. Hook; and to carry on the business of chemists and herbalists, drug merchants and dealers, etc. Secretary: Miss Norah Stockwell, Talbot Yard, 87 Borough High Street, S.E.1.

H. T. PARKER & SON, LTD. (P.C.).—Capital £2,000. Objects: To acquire the business of a chemist and druggist carried on by H. T. Parker at 207 High Road, London, N.22, and 16 Palace Gates Road, N.22. The directors are Herbert T. Parker, 77 Grovelands Road, N.13; Thos. M. Parker, Hampden, Hill Rise, Cuffley, Herts, and Mrs. Louisa Parker, 77 Grovelands Road, N.13.

MEDICAL GASES, LTD. (P.C.).—Registered in Dublin. Capital £5,000. Objects: To carry on the business of dealers in, distributors of and manufacturers of oxygen, nitrogen, carbonic acid, anaesthetics or any other kindred substances, etc. The directors are Samuel Warnock Aitken, 197 Mount Prospect Avenue, Dollymount, Dublin; Thomas Alfred Fannin, 32 Herbert Park, Dublin; David Frame and William Jones.

VIOSULFAL (OVERSEAS) CORPORATION, LTD. (P.C.).—Capital £100. Objects: To acquire a licence from J. I. Mrochem and Baron Degenhart von Loe to sell (except in certain localities) and in certain events to manufacture medicines and preparations known as "Viosulfal" or "Soluble Sulphur," as specified in an agreement with G. L. Whitworth. Baron Degenhart von Loe (permanent), 12 Unnastrasse, Hamburg; Geo. L. Whitworth (permanent), 4-7 Finsbury Court, E.C. (director of Viosulfal, Ltd.) and Jas. B. Bolton, 4-7 Finsbury Court, E.C., directors. Solicitors: Westbrook & Co., 14-18 High Holborn, W.C.1.

Private Arrangement

C. G. E. Schmitz, 5 Clock Parade, Enfield, chemist. The creditors interested herein were called together recently at Enfield, when the statement of affairs showed liabilities of £844 18s. 10d. After allowing £62 12s. 6d. for preferential claims, the net assets were £112 8s., or a deficiency of £732 10s. 10d. The debtor, it was reported, acquired the business in 1932, the purchase price being £650. His capital was £250, but he borrowed £90 from relatives and £350 from another source. With regard to the latter loan, a sum of £282 was still outstanding. The debtor estimated that during the first years of his trading the turnover was about £1,200 per annum. It had, however, lately declined. It was decided that the matter should be dealt with under a deed of assignment to Mr. A. Granville White, C.A., of Messrs. Francis Nicholls White & Co., 73 Cheapside, London, E.C., with a committee.

Bankruptcy Reports

Re C. A. White, 1 Turpington Lane, Bromley, perfumery manufacturer. At the public examination herein held recently at the County Court, Scarbrook Road, Croydon, it was stated that the gross liabilities were £15,236, of which £935 9s. was expected to rank for dividend, and assets of £1,869 3s. 5d., or a surplus of £933 14s. 5d. Debtor said that from 1914 to 1925 he traded as a haulage contractor, and then sold his business for about £400 and paid his debts. He started dealing in property. Later he bought the plant of a manufacturing chemist, and subsequently entered into an arrangement to dispose of that plant to a limited company, but the sale was not completed. Debtor had since transferred the chemists' business to another limited company, of which he was appointed managing director. That company ceased trading in October last year. Debtor attributed his failure to the first company not completing the purchase and inability to dispose of his mortgaged property. The examination was adjourned.

Under Five Pharmacopœias

Is it becoming more difficult to qualify as a chemist and druggist? The question is discussed by pharmacists who qualified under the Pharmacopœias of 1867, 1885, 1898, 1914 and 1932.

B.P., 1867 :

"The whole syllabus in one session," by Senex

I DO NOT feel at all competent to make any comparison concerning the examinations of to-day with those of the time when I qualified; for it seems to me now that it was some beneficent angel that placed my name on the lists of successful candidates. But it may be somewhat useful or in some degree interesting to try to recover some of my educational and examinational experiences. It was under perhaps the three most famous professors of the "Square" school that I entered it in 1880. Theophilus Redwood, Robert Bentley and John Attfield were the chief builders of that exemplary school of pharmacy, and in my time their influence in pharmaceutical education was paramount. But outside the doors of that institution a new spirit of scientific inquiry was abroad, and it was not long before the refreshing breath of young biologists and young organic chemists blew into those admirable but antique chambers. Most of us who were students there had in comparatively few years pretty well to discard, or at least greatly modify, the theories upon which our training both in botany and chemistry was founded. Bentley was even then advertising the coming of the new learning by calling our attention to Sach's big "Text-book of Botany" and by urging, with many disparaging remarks, us to throw away our "waist-pocket" handbooks of botany. Through the intervening years I have seen Dalton's ever-so-stable-and-permanent atoms dissolve into electrical entities which seem to be so huge and complicated as to embrace the universe of universes. We students were expected to absorb the whole of the syllabus for the Minor examination in one session, divided into two courses, of which the second was practically a repetition of the first. At the second course I was much more frequently absent than present, my absences being occupied by reading in the library, where I managed to consult other text-books than those prescribed in the syllabus—notably "Squire's Companion." This was for me a matter of necessity, although my need was, it may be, not so great as that of other students who were learning their practical chemistry at the same time that their lectures dealt with its theory and with problems of pharmaceutical chemistry. I had been so fortunate as to have regularly spent time in a laboratory—a small one—of my own.

Of course, the pharmaceutical student of to-day is a much better informed man than the student of fifty years ago. He has his trained teachers, professional examiners and a carefully systematised curriculum. Further, he has to undergo a well-planned course of scientific study before he embarks on his professional studies. A consideration of what I have said ought to make it evident that the apprentices of those bygone days had to apply themselves energetically to acquire some knowledge of the examination subjects before they sought the assistance of such teachers as were available. It is only right to say that the said teachers were men of enterprise and great ability, but it remains true that the old pharmacists were largely self-educated. The scientific knowledge needed for understanding the pharmacopœia of 1867 now seems very small when compared with the chemistry, biology and physiology and physics required for a proper appreciation of the contents of that of 1932.

B.P., 1885 :

"More ground to be covered in 1938," by Comparator

WHEN I BEGAN studying for the Minor examination (as the Chemist and Druggist Qualifying examination was then more briefly called) the 1885 British Pharmacopœia was, to pharmacists in business, the "new" Pharmacopœia. Indentured apprentices who took their vocation seriously were, I seem to remember, proud of the fact that their corner-stone was a book quite up to date in nomenclature and chemical formulæ, as its preface pointed out in somewhat expansive phraseology. The list of "Articles and Preparations the Names of which have been Altered" in that volume occupies, in fact, about two and a half pages of closely-set type. Incidentally, it may

be noted in passing that more than a few medical practitioners still write "morphiæ hyd." and "sodæ bic.," as in 1867.

The answer to the question I have been asked concerning the relative difficulty of this examination as it was then and as it is now is twofold. First, there is much more ground to be covered in 1938 than in 1894, the year in which I qualified. Looking through the syllabus of the now divided examination in last year's Educational Number of THE CHEMIST AND DRUGGIST, I find three new subjects—zoology, physiology and forensic pharmacy. The subject-matter of physics has been considerably expanded; and pharmaceuticals (previously named "pharmacy") has been transformed by the addition of pharmaceutical history, sterility tests and other matters. Practical pharmaceutical chemistry now includes operations to which the students of my day were strangers.

Secondly, do these conditions necessarily mean that the examination is more difficult? I am not sure that they do. They mean that it is more thorough—that, the total time allotted being more than twice as much, less is left to chance in testing the candidate's knowledge over a wide field. The question of relative difficulty resolves itself fundamentally, I think, into the question of the depth of knowledge that candidates are supposed to have acquired. I heard a competent judge of such matters say, in the early 'nineties, that if pharmaceutical students had command of all the material linking up the subjects on which they were to be tested they would be able to sit with confidence for a doctorate of science examination. Theoretical chemistry, for instance, was chiefly oral in those days, but I remember one candidate being asked to write out the oxides of nitrogen with equations for making them. A question of this kind, followed by a few minutes' *viva voce*, can be very searching, and may largely or entirely determine a student's fate.

B.P., 1898 :

"A 'shot' at the examination very often came off," by Diogenes

THE MINOR EXAMINATION, as it was called in the far-off days when I began my apprenticeship, seemed a long way off. I had not been in the pharmacy for many days before I was introduced to the "chemist's bible" by my apprentice master. This, if I remember rightly, was to be the gateway to the road along which I must travel before obtaining the coveted diploma which was to enable me to open a shop. The B.P. was to be the first and chief work to be studied, and the method of so doing was outlined to me in what I have always regarded as a most excellent method of teaching a youth in a practical fashion. Every B.P. preparation I made, and in those days many were back-shop products, the formula given in the official publication was to be learned and studied, and thereafter the ingredients of the various formulas were to be followed up in other books and a knowledge acquired of their sources, origins, doses and so on. This seemed to be a laborious method of learning, but it had many advantages for students of my day. It always is easy for the student to imagine his task is a harder one than that of those who have gone the road before him. No doubt this is true in many ways. When I was a student, however, I was also serving an apprenticeship of a sort. Night classes had to be attended three nights a week, and as they were in a town three miles distant it can be imagined that, after a long day in the shop and cellar, it was no fresh young man who went for one to two hours' work by train and came back on foot. This early training was, however, an excellent foundation for an easier path for me towards qualification than had I been plunged into the usual course in those days of six months' day-time classes, for the average chemist assistant was usually more interested in qualifying than in the actual courses he followed. These were largely determined by the teachers of pharmacy who had their individual views on how best the necessary knowledge could be acquired. But as money was sometimes

scarce evening class work meant that at any rate a "shot" at the examination after three months' day classes could be taken, and in fact it very often came off. It was, however, among the more unfortunate chemists' assistants that I found myself, since the cost of even a three months' day course was prohibitive, and I had to take the examination working at night classes only. Fortunately, this is no longer possible for anyone, even if it could be done with the extended syllabus as it is to-day. Before the days of the compulsory curriculum there were many such assistants who had to scramble through the examination as best they could. Work for the Minor examination in my own case lasted nearly six years. In that period I served a four years' apprenticeship, spending three winter terms of six months each at the technical-school night classes, where I was fortunate to tie with another student for a £25 scholarship, and then a period of about eighteen months' further night work in a city school of pharmacy admirably conducted by a teacher who helped many students by his tireless energy and enthusiasm towards their goal. If I have dwelt more on this aspect of qualifying than on the actual study, it is to show that, although the examination may appear more difficult to-day, and undoubtedly it is so, yet the difficulties of conditions under which some of us had perforce to qualify may balance in some degree the additional difficulties of a larger syllabus and of wider scope.

B.P., 1914 :

"Difficulty largely in the student's mind," by Passabo

WHATEVER VIEWS MAY be held as to the relative difficulty of the pharmaceutical examinations at various periods, students of my year were not in any doubt on the subject. In 1927, as entrants for the Preliminary Scientific examination, we had a heightened consciousness of its difficulty on grounds which I shall presently state. We were, moreover, under the disadvantage of knowing that the existing oral tests were shortly to be exchanged for a written examination (a change, of course, for the easier!). It was, perhaps, a little inconsistent that some amongst us were desperately anxious to pass before the changed conditions took effect, but that may have been for financial reasons. Our belief in the stiffness of the examination was based on the growth of the syllabus during the years, so that at that time it covered a wider range than ever previously, coupled with the risks inseparable from an oral examination. For readers whose experience is confined to written examinations, I should perhaps describe these hazards as we understood them. There was first the question of temperament. "Nerves" certainly count in a written test, but there is time to pull oneself together. Not so in an oral test, for which a period of waiting in a "funk" room is in any case an unfortunate preliminary. The candidate must keep himself closely under control, so that he can call forth the knowledge he has absorbed, and at the same time make an impression on the examiner. Some students undoubtedly suffered badly from nervousness, and as many of these returned to the various colleges for revision courses, their effect on other students was to give a biased and perhaps unwarranted impression of severity. Another anxiety was caused by what was known or believed of the examiners themselves. Their peculiarities were discussed by students in my time in a way that would have surprised them, and the percentage of "failures" at the hands of each was constantly canvassed (who obtained the figures or whether they were reliable I still do not know). A final difficulty, which had the proportions of a grievance, was that so little ground was covered in the questionings of many examiners. My own present view is that the examiners were for the most part adept at assessing a person's knowledge from what was left unsaid as much as from actual answers, but it will be appreciated that candidates frequently imagined that they were questioned about the few unimportant facts that were strange to them instead of about the vast body of knowledge they had, doubtless, acquired. The effect of these anxieties upon me, at least, was to induce me to adopt a procedure that was certainly successful, but which is not to be recommended. What occurred was that I studied intensively and with the utmost thoroughness the detailed syllabus in each subject, but never read a word on any associated subject or anything which widened the scope of my knowledge. The result was that I passed and considered the examination absurdly easy, but have later discovered that my "erudition" was a poor, narrow, inelastic structure.

In the following year, when I studied at the "Square"

for the Qualifying examination, my reactions were entirely different. In the genial, kindly atmosphere imparted by the late Professor Greenish, it was impossible to worry. I took things easy, remembering that Part I had not held the anticipated terrors. A few days before the examination I became suddenly aware of my lack of knowledge and "panicked." The examination was an acute torture, and there followed a certainty of failure under which I was acutely miserable. That actually I passed is a circumstance for which I have never been able to account.

The moral I draw is that at all times the difficulty of the examination is to a large extent in the mind of the student. On my present knowledge I could not pass to-day's examination. Nor, I suppose, could the majority of pharmacists who qualified earlier than I did. The questions set, without doubt, require more knowledge than formerly. But the facilities for learning are greater, the training more systematic, and the hazardous element of oral examinations has been eliminated.

B.P., 1932 :

"Examinations more scientific," by Recens

TO-DAY THE QUALIFYING examinations are more scientific than formerly. There is, I think, a better directed and more orderly attempt to discover the knowledge and limitations of the candidate. Undoubtedly the would-be pharmacist of to-day has to possess a wider and deeper knowledge than his predecessor of, say, thirty years ago, but he is greatly assisted by the division of the examination into two parts, and by the greater, though not perhaps adequate, preparation he has to undergo. The pass figures for the Part I examination have shown some improvement recently, but they are still far from satisfactory and the standard set in this examination must be unreasonably difficult, considering the training that the average candidate receives. One remedy would be for the examination to be in two parts that could be taken separately at the option of the candidate. The Society might start a school for Part I students to set a standard for other institutions. My preparation for Part I was spread over three years of part-time day classes, and I think that this method of slow assimilation has advantages over the present one-year full time course. The introduction of zoology into the Part I syllabus, with the compensating reduction in botany, was a great step forward. The old syllabus in botany was overweighted, and called for a more detailed knowledge than the ordinary candidate could be expected to possess. The new syllabus in biology must be far more interesting, and, looking at it, I wish that I could have taken it. The Chemist and Druggist Qualifying examination now calls for less memory work, although the candidate with a first-class memory and a rather weak intelligence still stands a better chance than the one with a first-class intelligence and poor memory, which is not as it should be. Most students have pretty good memories before they finish their studies, and the average student's greatest trouble seems to be simple arithmetic. It is far more important for a pharmacist to be able to calculate a percentage solution than it is for him to be able to enumerate the principal constituents of gentian, and I think that greater importance should be attached to this branch of pharmaceuticals. The B.P. is now a more compact and scientific volume, containing fewer monographs, which makes it much more easy to study. The introduction of sterilisation has made the final examination more difficult. The theory of sterilisation is simple and interesting, but "sterile preparation" of prescribed medicines now furnishes the greater anxiety of candidates in dispensing. If there is an accident—for example, a cap blown off a vaccine bottle—or if the autoclave leaks slightly, the whole period is ruined. The period for dispensing should be increased and perhaps divided between sterile and non-sterile preparations. There seems to be a number of differences in the practical methods of teaching this important subject at different schools. Physiology, a recent introduction, is interesting, instructive and useful. Its syllabus is my idea of what a reasonable syllabus ought to be. I was thankful that it was introduced, and the unwieldy syllabus in pharmacognosy pruned, before I started my course. Pharmacognosy still contains too much unnecessary memory work. Research workers who discover unimportant constituents in vegetable drugs need to learn that "any godfather can give a name"; there is no reason why their discoveries should be inflicted on final students. The reduction in the knowledge of Latin required has helped most students, especially as Latin is no longer compulsory in the entrance examination.

A Pharmacy Student's Day

By a Student at the London College of Pharmacy

BRRRR-ING! Brrrr-ing! What? Surely it can't be 6.30 yet—why I've only just got into bed. Just ten minutes more! No, I'd better not—I didn't do much work last night and there are all those Organic notes to be re-copied. My day has begun. I am a pharmacy student and have to make use of every moment at my disposal. Our course is comparatively short, the material to be assimilated of more than considerable proportions, and if I want that coveted "M.P.S." at my first attempt I cannot afford to waste much time. Gone are the "good old days" when nine months of casual study would see you through the examination.

I get up reasonably early and do an hour or so of work before breakfast. When I use the term "work" I mean serious and steady study. I add this note for the benefit of those who consider that the term only applies to manual labour or to activities for which a wage or salary is paid. That by the way. I put my notes in order and look over possible questions for the afternoon's test. Breakfast, a chat with the other inmates of our "digs" (also students) and then maybe another half-hour of desultory note-reading before setting off for college.

The Morning's Lectures

Arrived at college, one's first routine task is to scan the notice boards and see what is new. Maybe the football, hockey or tennis teams for the week have been posted up or there may be a time-table alteration or a special meeting. The first lecture starts at 10 sharp. "Rank" (Mr. Rankin, our principal, philosopher and guiding star) does not appreciate unpunctuality. The subject is pharmacy this morning—the standardisations of the B.P. Though it would be heresy to admit this unreservedly to other students, I am interested. (I can never make out why it is considered almost indecent to admit that you are really interested in a subject, but it is so.) All kinds of points arise and are discussed at some length. Our lectures are not just note dictations, but allow of discussion. In fact, queries are welcomed. This, in my opinion, makes them doubly valuable, though I am aware of the other school of thought which holds that it is an out-of-school task to consider queries which arise from a given lecture.

At 11 a.m. we adjourn to the tea-room that we are lucky enough to possess. The tea-room is the social centre of the college and the two daily breaks here are always pleasurable. Here is a babble of talk of hockey, cricket, our next continental tour, the forthcoming dance, and of all those varied activities which more than compensate for the time and energy which we must devote to our work. Of course, there is not sufficient room for all of us, so some promenade round the botanical garden. If we do this, we invariably pause to examine one of the many specimens; strange how interesting botany and pharmacognosy become when one is not compelled to study a particular aspect!

All too soon the fifteen minutes pass by and we are recalled to work. For my group there is pharmacognosy until 1 p.m., while others of the C. and D. section repair to the physiology laboratory for practical work. I wish I was in the physiology group this morning, for they are using the kymograph to investigate the heart beats of a pithed frog. We all moan about the introduction of physiology into our syllabus, but it is undeniably interesting, and the comparatively small amount that we have to learn tends to make us want to know more about the subject. Still, I suppose that if the syllabus were extended we should have another first-class complaint.

We proceed with our pharmacognosy, which seems particularly dull this morning. I always find it hard to get started in this subject but, once under way, the aspect gradually changes. We are examining surgical-dressing fibres and are surprised at the difference between cotton and wool fibres when examined microscopically. We shall not be misled by the term "all wool" in future if we have a "mike" handy! It gradually dawns on us that this pharmacog. is not such a list of "names and addresses" as we had imagined; we become interested and things seem brighter.

Lunch break comes from 1 to 2. Most of us go out to eat, but a small group bring sandwiches for economy, and gather

in the tea-room. Games are, unfortunately, forbidden during college hours, but there is a piano available, and this is always in use during the break. Some of the performers on this instrument make me wonder for a moment why they ever took up pharmacy. They could easily earn a living in a first-class dance band. On second thoughts, however, I realise that pharmacy has probably some advantages over a dance-band life. Not much work is done during the lunch hour; but, then, is it anywhere?

Afternoon Test

Two o'clock comes and we start again, though not in the same vim as when we commenced the morning. Our good resolutions to use every available moment seem to have dulled a little. The fact that the examination is not very far away seems to matter little. The truth is that perhaps we have eaten too quickly and too much.

There is no lecture this afternoon, but my group is to undergo a three-hour pharmacy test, the remainder of the class going to the laboratories for pharmaceutical chemistry. These "tests" are a weekly feature, with a full "paper" under conditions approximating to those of the examination. The laboratory is a hive of activity, for five preparations are required in the given time and we have to work fast. No time for talking or for tea to-day. At the end of the period the papers are marked by "Rank" and his staff in front of the class, so that all may profit from the mistakes of themselves and others.

These tests, as already stated, are a feature of our course. We have them in all subjects and they are both feared and valued. They are feared because one may do badly and be called to account for it. They are valued because they prevent us from living in a fool's paradise and enable us to get a clear idea as to our capabilities. In these days, no sensible fellow enters for the examination unless he has a reasonable chance of passing, and the results of these tests soon disillusion the optimist who originally had the idea of taking the examination in the hope of "fluking" a way through!

The Preliminary Scientific students have an even more stringent series of tests, with detailed, published lists of results in all subjects and reports to parents when a required standard is not reached. I still remember my days in "Part I" at the L.C.P. when we used to wait for the "test lists" to go up with something more than trepidation!

To return to the day's schedule: while we are being thoroughly tested in the dispensing laboratory, the other section is away downstairs in the pharmaceutical chemistry laboratory doing the work that we did yesterday and hunting for those elusive glucosazones.

Relaxation

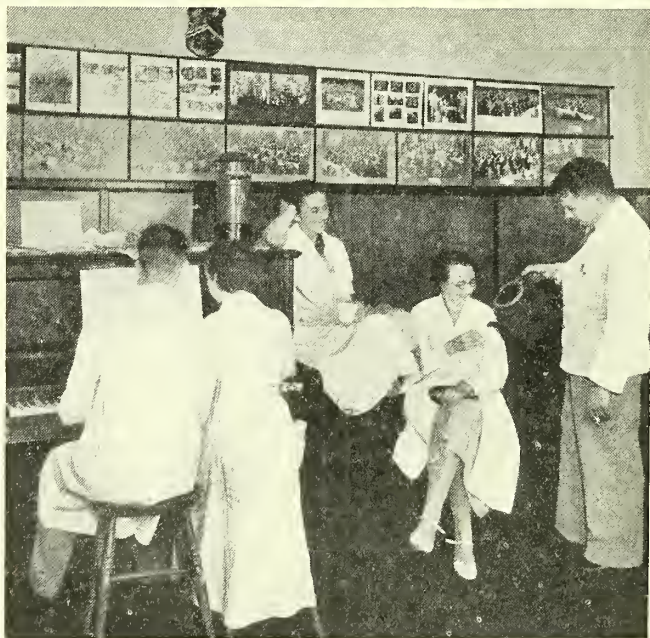
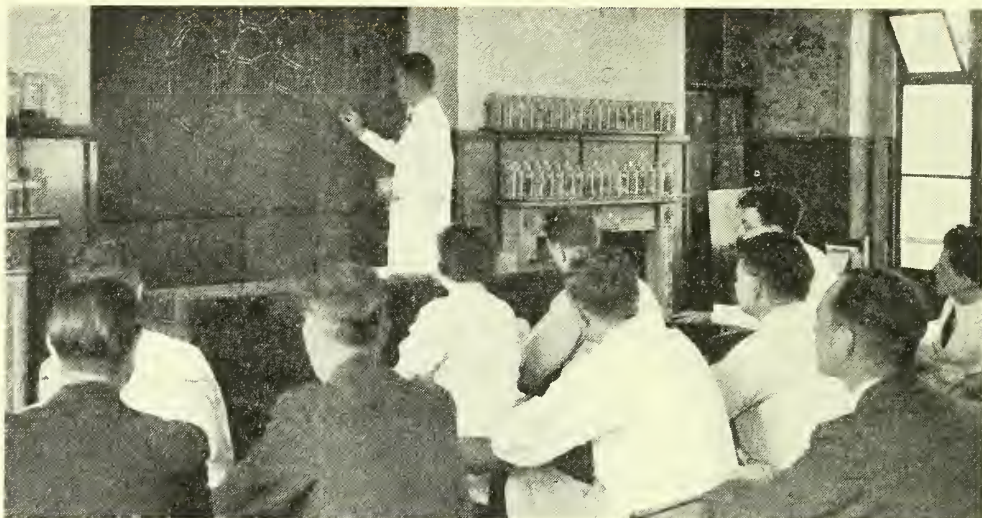
Five o'clock comes too rapidly, as it always does when one is working against time. The preparations are handed in and checked. The "official" college day is over. Now we can afford, I may say need, a little relaxation. Fortunately the "powers that be" at the London College have wisely provided this. For the games-minded there are table tennis and darts; for the musicians the piano in the tea-room. Once a week we can lend a hand with the production of the college magazine, the L.C.P. "Argus." In the lecture room this is assembled, the pages punched together, the copies stacked or posted to "Old Cyanide" subscribers all over the world. Another group of enthusiastic Thespians may commandeer one of the rooms and rehearse for a forthcoming play to be produced in the college theatre. From 5 to 6 is the "play-time" of the London student, and very welcome it is. After six our "day" recommences. Home to tea and then more study. We form discussion groups and argue over the knotty points arising out of the day's work. We quote extracts from books and test each other's knowledge—or absence of it. An so the process goes on till supper and bed.

An article on "A Day in a Hospital Pharmacy" appeared in the ANNUAL SPECIAL ISSUE, June 25, p. 770.

Scenes in the Life of a Pharmacy Student

By courtesy,
London College of Pharmacy.

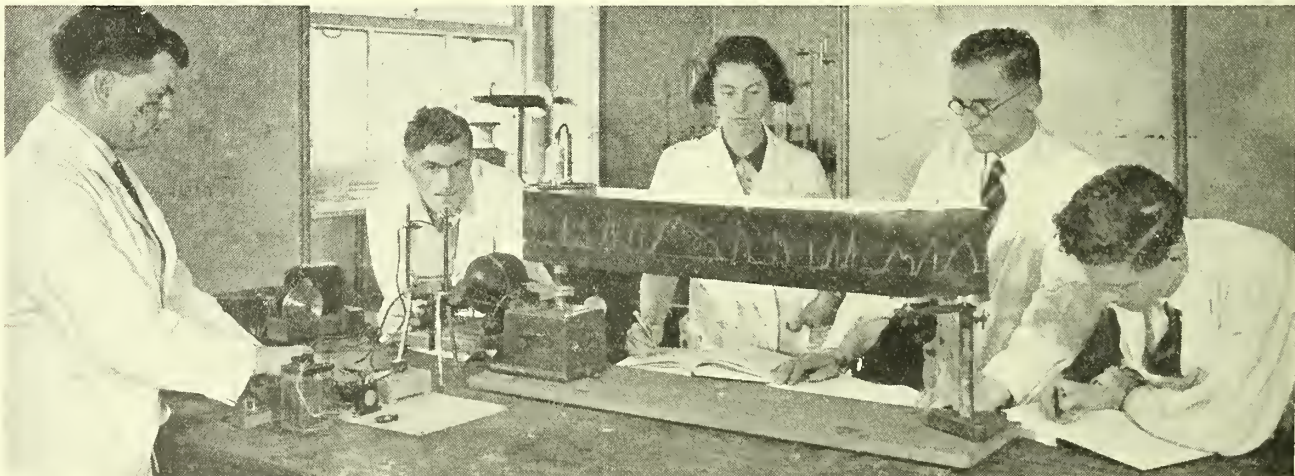
Left, Most days start with a lecture, when students may be called upon to display their knowledge on the blackboard.



A break for tea each morning and afternoon is welcome.



The pharmacy laboratory seems to epitomise one's ambitions to qualify.

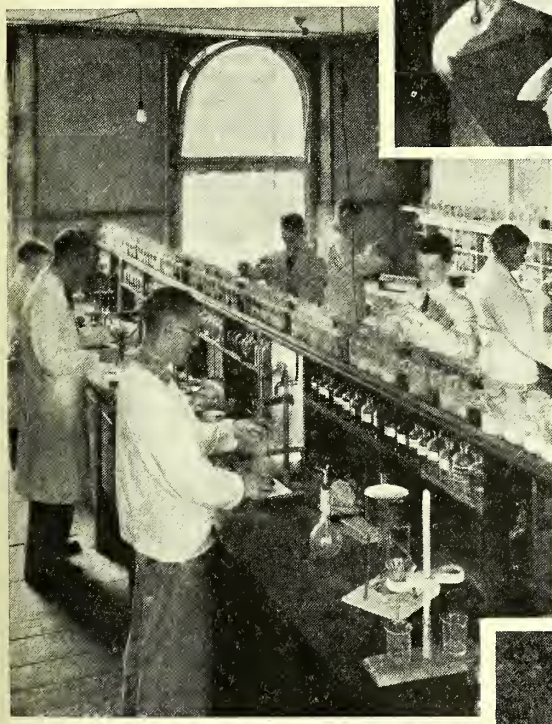


Practical demonstrations in physiology are far from dull.

Scenes in a Pharmacy Student's Life (continued)

Right, Microscopical examinations prove the existence of text-book "characters" in pharmacognosy.

Below, Many quantitative analyses must be done before facility is acquired.



Left, Accurate weighing is essential in a pharmacist. The chemical balance is constantly in use.

Below, Between lectures, much may be learned from a visit to the botanical garden.

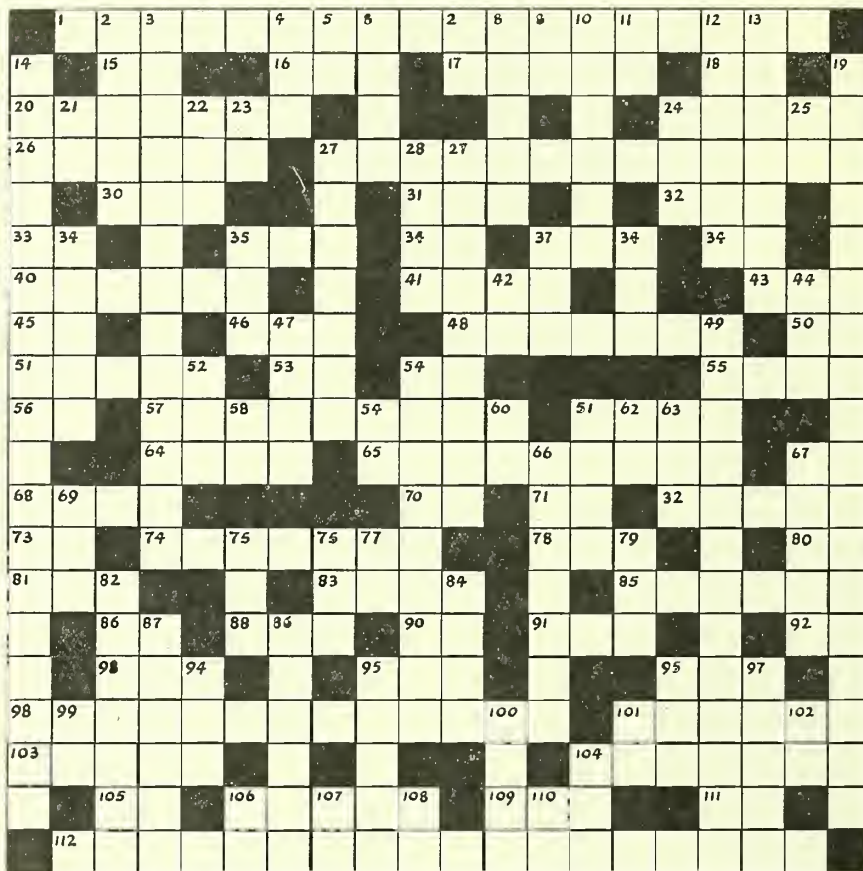


Pharmaceutical Crossword

Combining interest with a test of occupational knowledge

CLUES DOWN

2. Electrode at which Anions are liberated (5).
3. Property possessed by certain elements of spontaneous ray emission (13).
4. One of the phalanges (3).
5. Reverse of nitric oxide (2).
6. A possessive cod (4).
7. Direction not found on prescriptions (2).
8. Product of reaction between an aldehyde and hydroxylamine (5).
9. Adjacent elements in the second short period (2).
10. Oxidation product of a secondary alcohol (6).
11. One of London's colleges (2).
12. West wind (6).
13. Ferment which decomposes insulin (7).
14. Chlorine substitution product of benzene (18).
19. Process essential to plant growth (two words, 6, 12).
21. Same as 15 across (2).
22. Most people commence their day at the other end (3).
23. Two atoms of an element (2).
24. An American science degree.
25. Element related to chromium (2).
27. Of less weight (7).
28. Abbreviated but still four times (4).
29. Prefix derived from a metal (9).
34. A narcotic (5).
35. Potassium cyanide (3).
37. Unit of work in the C.G.S. system (3).
38. Possibly an up-ended Winchester of paraffin (3).
42. Upside down with 97 down as stated (2).
44. Possess (3).
47. One in a list (4).
49. A B.P. tincture (two words, 5, 8).
52. Nothing would make this a frieze (3).
54. Emitting rays (9).
58. Definite and masculine counterpart of 31 across (2).
59. A molecule of iodine, not an affirmative (2).
60. What the aorta commences with (2).
61. Potassium (4).
62. Sex appeal, as some have it (2).
63. To describe this as an alkaline liquor is a falsehood (3).
66. Dyeing fixative, usually an aluminium salt (7).



67. Resulting in death (5).
69. Unit of electrical resistance (3).
75. Legume (3).
76. Beginning of a raceme (3).
77. Adding a T might precipitate an explosion (2).
79. Symbolic elements (3).
82. Present participle of *foveo*, to ferment, in the ablative singular (7).
84. Obtain reward for one's labour (4).
87. Curtailed cavity in cell protoplasm (6).
89. As a drink (abbreviations, 3, 3).
94. To be taken every third day (3).
95. Swift (5).
96. West Indian island with 102 down (3).
97. There is this to be said in Latin (5).
99. Simply behold (2).
100. This -ometer is used for measuring atmospheric oxygen (4).
101. Colloquially tuberculosis (2).
102. See 96 down (2).
104. Mineral residue (3).
106. Arts degree (2).
107. A little thing in Latin (2).
108. French this (2).
110. Same as 36 across (2).

CLUES ACROSS

1. Botanical source of chaulmoogra (12, 6).
15. Sodium (2).
16. Unusual mixture of three gases (3).
17. T added to this would produce a well-known N.H.I. cough mixture (5).
18. Reverse of 7 down (2).
20. Pain reliever (7).
24. Latin scum (5).
26. Angle at centre of a circle subtending arc equal to radius (6).
27. Abbreviated Latin version of a B.P. test solution (three words, 3, 5, 5).
30. Reverse a female hare (3).
31. Another female, and a French one (3).
32. Meaningless as it stands, but add D and you make it two or change A for E and you put a little colour into it (3).
33. Act or swindle (2).
35. Small barrel (3).
36. Positional preposition (2).
37. One of the *Teleostomi* (3).
39. *Ars* is not so *longa* when decapitated (2).
40. Popular abbreviation for a South American root (6).
41. Needs -ate to convert it into a direction familiar to quantitative analysts (4).

43. An immeasurable period (3).
45. Here begins a botanical lemon (2).
48. Common *Artemisia* (7).
50. Well on the way to hostilities (2).
51. Tests for this state of the atmosphere are carried out with a hygrometer (5).
53. Element in the sulphur group (2).
54. Turning this round the other way provides an alternative (2).
55. Products of electrolysis (4).
56. Fifty this side of the thousand (2).
57. Plant in bad odour with most pharmacists (9).
61. Drying oven, of a sort (4).
64. The same (4).
65. Some pharmaceutical Latin expressions might be described as this (9).
67. If when reversed gives you two related elements (2).
68. Plant organ that exhibits positive geotropism (4).
70. A U after these letters may make them worth something (2).
71. Oil (2).
72. Also a Latin conjunction (5).
73. Two elements that can combine, but not in these proportions (2).
74. Not growth, yet the reverse of wasting away (7).
78. Tombstone Latin abbreviation (3).
80. Metallic element (2).
81. Force that maintains a difference of potential (3).
83. Before in a prescription (4).
85. Bromine substitution product of acetaldehyde (6).
86. Five pints (2).
88. The dose gradually increasing (3).
90. Among other things, it's first-class reversed (2).
91. Spark bridging carbon poles (3).
92. Lanthanum (2).
93. An ambulance unit (3).
95. Royal Naval Reserve (3).
96. Reverse for a Doctor of Surgery (3).
98. Essentially a piece of soft iron in wire coil (13).
101. Pacific island (6).
103. Latin ninth (5).
104. Latin to throw away (7).
105. Ad (2).
106. A well-known acid (5).
109. Article made in Germany (3).
111. The first part of this act has been cut (2).
112. Would a whiskered face be correctly so described? (8, 10).

Barbasco Root

THE following notes on the cultivation of barbasco root (*Lonchocarpus*) have been extracted from a report published in the Bulletin of the Imperial Institute, April-June, 1938 (Vol. XXXVI, No. 2).

Considerable interest has been taken in recent years in the use of the roots of certain species of *Lonchocarpus* as insecticides. These plants belong to the same section of the *Leguminosae* as derris, and their roots, like those of the latter, contain rotenone. The species concerned occur in the tropical regions of South America, and the possibility of growing the plants in Empire countries where similar conditions prevail is under consideration. The most important species entering commerce from Peru is *Lonchocarpus utilis*, where it is known as "cube." In Brazil the species chiefly concerned is *L. urucu*, which is called "timbo" there. Among Spanish-speaking people of Latin America the term "barbasco" is used generically for all plants yielding roots of this type. The plants in the natural state are large woody climbers which may reach the tops of tall trees, but usually under cultivation they are not allowed to remain after about four years, up to which age they have a bushy form.

Habitat

The species of *Lonchocarpus* known to possess insecticidal properties occur principally in the Amazon basin and on the lower slopes of the bordering hills and mountains. This region, which extends from latitude 3° N. to 15° S. and is bounded on the west by the Andes mountains is a shallow saucer-like area intersected by innumerable rivers which form the drainage system. In general there are two distinct topographical features of this region, the "varzeas" or flood plains, that is land subject to periodic inundations by the rivers, and "terra firme" or so-called "uplands" which lie above the flood limits. Practically the whole of the Amazon basin is low-lying with only a few areas above 500 to 600 feet. The "uplands" themselves seldom rise more than a hundred feet or so above the flood plain, until they merge into the high land which comprises the lower slopes of the bordering mountains of the basin. It is mainly on the well-drained soils of the "uplands," and the bordering higher ground, that species of *Lonchocarpus* occur in a wild state. In Peru, *L. utilis* is cultivated to a considerable extent in the comparatively low-lying country around Iquitos, while Killip and Smith record that they found this species (then called *L. nicou*) thriving at 4,100 feet in the Montana, a region comprising the lowest Amazonian slopes of the Andes, although along the Apurimac river they were told it did not grow above 3,000 feet. The bulk of the barbasco exported from Brazil comes from the State of Para and Amazonas in the north.

Climatic Conditions

The climate throughout the Amazon Basin is on the whole very uniform, although local conditions may result in some variations in the rainfall and in the difference between night and day temperatures. The temperature rarely rises above 93° F. in the shade and never reaches 105° F. At Iquitos the average temperature during the day is stated to be about 86° F., and at night 72° F. In Brazil the temperature conditions in the *Lonchocarpus* producing areas of the north are very similar to those of Peru. *Lonchocarpus* appears to require tropical conditions for its growth and cultivation. Experiments in the more temperate coastal districts of Peru have failed as the plants were unable to withstand the relatively low temperature, which at times fell below 50° F.

Compared with many tropical countries, the total annual rainfall in the Amazon basin cannot be considered heavy. In the Montana the most rainy period is from October to May, reaching a maximum in January to April; the lowest rainfall is in July and August. The average rainfall in this district is always more than 80 in. per annum.

The country around Iquitos also has a fairly heavy and well-distributed rainfall; one set of records shows 93 in. per annum. The rainy period is from October to May, as in the

Montana. The State of Para in Brazil has approximately the same rainfall as Peru, both as regards the amount and distribution.

The evidence as to the exact value of shade for the growth of *Lonchocarpus* is not entirely conclusive. Several writers refer to it as being shade-loving. When cultivated, it is usually grown in open clearings, although frequently interplanted with such crops as cassava. On the whole, it would appear that partial shade is probably beneficial in the early stages of propagation, but later under certain conditions more vigorous growth may take place in the open.

As regards soil conditions, all species of *Lonchocarpus* appear to require a fairly open well-drained soil. *L. utilis*, for example, is said to grow well on sandy soils but not in places subject to periodic inundation by the rise of rivers. *L. urucu*, which is widely distributed throughout Amazonian Brazil, prefers *terra preta* (black soil, generally agricultural soil containing a good amount of humus), and is usually confined to the well-drained areas of "terra firme" occupied by high forest.

Cultivation

In the principal producing countries *Lonchocarpus* is cultivated on plantations of various sizes often in the vicinity of dwellings. Killip and Smith, who visited Peru shortly before *Lonchocarpus* became an article of commerce, state that the cultivated areas or "barbascales" were found to vary greatly in size from small clearings of 25 to 100 plants intended to meet the fishing needs of a single Indian family to large plantations of as many as 10,000 trees, the source of supply for a whole neighbourhood. Propagation by stem cuttings is universally adopted where the plant is cultivated, the native method consisting merely of burying a piece of the stem about a foot long at a depth of two or three inches below the soil. The following method for establishing a plantation has been recommended by the La Molina Experiment Station in Peru. Cuttings should be taken from that part of the stem nearest the base, if possible with traces of roots attached. Cuttings of about one foot in length, having two or three nodes, should be planted in the soil at an angle of 45°, one node being allowed to project above the surface; a space of about three feet should be left between neighbouring plants. The best time for planting in Peru is said to be September or October. The plants develop rapidly, and have usually reached a height of three feet by the end of the first year; after two years they stand five to six feet high, and at three years eight feet is generally attained.

Pinto, who carried out cultivation experiments with "timbo urucu" (*L. urucu*) and "timbo macaquinho" (*L. utilis*) at the Aprendizado Agricola do Para, Brazil, records a more rapid rate of growth during the first year, and states that at the end of twelve months from planting these species attained a height of about seven feet. One difficulty encountered in the cultivation of *Lonchocarpus* is the very heavy growth of weeds. This can be reduced to some extent by interplanting with crops such as cassava, beans, pineapples, etc. Harvesting of the root takes place at the end of the second, third or fourth year. The digging of the roots can be done at any time of the year, but preferably when there is no rain, as at that time the work is easier and the roots can be removed in a cleaner condition. In Peru the best period is between May and August.

Yields

There would appear to be little reliable data as to yield. Killip and Smith state that in the case of *L. utilis* the average weight of the root system of a two-year old plant is 3 lb., which is equivalent to about 1½ lb. of dry material. Wille considers that when the roots are harvested between the third and fourth years of growth, 2 kg. of fresh roots can be obtained per plant, giving a yield of 4.4 to 4.8 metric tons per hectare. Pinto, in the experiments referred to above, found the yield to be 3 kg. of fresh roots per plant, but he does not say at what age the roots were harvested. According to information furnished to the Imperial Institute by H.M. Commercial Counsellor at Rio de Janeiro, in Brazil the yield of fresh timbo roots, harvested three and a half years after planting, amounts to 17½ metric tons per hectare.

Trade Notes

POTTER'S CYCLOPÆDIA OF BOTANICAL DRUGS AND PREPARATIONS, which is now in its twentieth thousand, is advertised elsewhere in this issue. It is published by Potter & Clarke, Ltd., 60-64 Artillery Lane, London, E.1.

HOT WATER BOTTLES.—Reliance Rubber Co., Ltd., Cremorne Works, Lots Road, Chelsea, London, S.W.10, have introduced three new hot water bottles for the season 1938-39, two of which are illustrated. The larger bottle, described as the Good Companion, is of exceptional capacity and weight and has a wide neck for easy filling. It is supplied in display box complete with velvet cover, which is sewn round the bottle, but may easily be removed for washing purposes. The



velour has been processed and is non-absorbent. This is a brown bottle in peach-coloured cover only. The other bottle illustrated is reserved entirely for sale by pharmacists and meets the chemist's demand for a competitive product. This bottle has reinforced edges and is of heavy weight. Three colours are available, blue, green and pink. The pestle and mortar design is stamped on the front of the bottle. The next bottle supplied in a two-coloured lithograph box is also a high-quality product. In addition to these, of course, there are many other types of bottles suitable for all classes of trade.

ATTENTION is directed to the notices in our advertisement pages of the following colleges and institutes:—

Aberdeen, Robert Gordon's Technical College
Birmingham Central Technical College
Bradford Technical College
Brighton Technical College
British Optical Institute, Ltd.
Chelsea Polytechnic
Edinburgh Heriot-Watt College
Glasgow Technical College
Huddersfield Technical College
Leeds College of Technology
Leeds University
Leicester College of Technology
Liverpool School of Pharmacy
London College of Pharmacy
Manchester Tutorial College
Manchester University
Merchant Venturers' Technical College.
National Association of Opticians
National School of Chiropody
Norwood Technical Institute
Plymouth and Devonport Technical College
Preston, Harris Institute
Regent Street Polytechnic
Royal Dental Hospital
St. Andrews University
Salford Royal Technical College
School of Surgical Chiropody
C. A. Scurr (Optics)
Sir John Cass Technical Institute
South of England College of Pharmacy
South-West of England University College
Southampton University College
Stockport College for Further Education
Sunderland Technical College
Welsh College of Pharmacy
Westminster College of Pharmacy
Wolverhampton Technical College
Woolwich Polytechnic
Worshipful Company of Spectacle Makers.

INCOMPATIBILITY IN PRESCRIPTIONS.—A new and enlarged edition of this book by Dr. Thomas Stephenson, Ph.C., editor of "The Prescriber," is advertised elsewhere in this issue.

WIRE-CLOTH.—Thomas Locker & Co., Ltd., Warrington, invite inquiries for Locker wire-cloth, which is specially woven with strong double crimps to prevent the aperture distortion. This company manufacture all types of woven wire-cloth.

CHRISTMAS SHOWROOMS.—A list of the Coty showrooms in the various towns is given in our advertisement pages for the convenience of buyers in various localities. Those who are able to call are invited to write for full details to Coty (England), Ltd., 3 Stratford Place, London, W.1.

WINTER CONTRACTS.—Burgoyne Burbidges & Co., Ltd., East Ham, E.6, are now beginning winter contracts for assorted galenicals, malt and cod-liver oil and kaolin poultice. Schedules, contract forms and specimen labels are obtainable by return of post on receipt of a card stating requirements.

CHANGES OF ADDRESS.—John Bell, Hills & Lucas, Ltd., announce a change of address to Oxford Works, Worsley Bridge Road, London, S.E.26—N. W. Mitchell & Snow, Ltd., inform us that their only address is that of the new works at 133-145 High Street, Stratford, London, E.15.

NEW DOG MEDICINE.—Animag tonic for dogs is a new dog medicine introduced by the makers of Halmagon, Tonicity Laboratories, Ltd., 6/8 Emerald Street, London, W.C.1. It is intended for the use against eczema, mange and other skin diseases. It is available in one size only. Further details are given elsewhere in this issue.

VITAMIN SKIN CREAM.—F. W. Hampshire & Co., Ltd., Sunnydale, Derby, have produced a vitamin skin cream which, besides being a smooth and effective powder base, contains a correctly-adjusted proportion of the skin vitamin which, it is stated, has been found most valuable in keeping the skin tissues fresh. This product is packed in small tubes.

LOCATION FOR LIGHT INDUSTRIES.—The Cumberland Development Council, Ltd., and The West Cumberland Industrial Development Co., Ltd., are directing the attention of potential manufacturers to the possibility of West Cumberland as a suitable place for light industries. Excellent docking facilities for sea-borne freights are nearby, and the importance of the west coast ports concerned in time of national emergency has been emphasised by the Government. Coal, electric power and water are available, and there is no labour shortage. Those concerned should apply to the Joint Publicity Committee of the above companies at 30 Roper Street, Whitehaven.

NEW MAX FACTOR PRODUCT.—Max Factor, Hollywood and London (Sales), Ltd., 16 Old Bond Street, London, W.1, have introduced a new cream described as

"normalising cream," which can be used for all types of skins. This product is being featured in all the Max Factor advertising, and an attractive sales aid has been produced for use in window and counter display. Normalising cream is packed in a large white jar with red and gold label and top.



CALCYDIC TABLETS.—Calcydic tablets are a new product issued by Allen & Hanburys, Ltd., Bethnal Green, London, E.2. Each tablet contains dicalcium phosphate, grs. 2½, and vitamin D, international units 500, in chocolate-flavoured glucose and presents calcium phosphorus and vitamin D in a form acceptable to both children and adults. These products are issued in bottles containing 40, 100 and 200.

Births

Notices for insertion in this column must be properly authenticated.

DONOGHUE.—At Killarney, on July 28, the wife of Patrick J. Donoghue, Ph.C., of a son.

Marriages

POWELL—RICHER.—At St. Mary's Church, Prittlewell, Essex, on August 6, Harold Vernon Powell (director, Vernon Powell, Ltd., druggists' sundriesmen, London, E.C.2) to Marjorie Joan Richer, Southend-on-Sea.

KING—HOPKIN.—At Rugby Roman Catholic Church, on August 6, Arthur B. King, M.B., son of Mr. Arthur E. King, Ph.C., Norwich, to Eleanor A. M. Hopkin.

RUSSELL—DUNLOP.—At the Charlotte Rooms, on August 1, John Oliver Russell, M.P.S., Edinburgh, to Mollie Dunlop.

SHELTON—PICKETT.—At Luton, recently, George N. Shelton, M.P.S., F.S.M.C., F.B.O.A., Luton, to Ivy L. Pickett.

Deaths

ANDERSON.—At Coatbridge, on August 3, Mr. Roderick Douglas Anderson, M.P.S., 12 Hamilton Road, Bellshill, Lanarkshire, aged fifty-six.

BEVIS.—On July 31, Mr. George Frederick Bevis, M.P.S., Eastergate, Chichester, aged fifty-six. Mr. Bevis had been ill for a considerable time, and underwent an operation last year. He qualified in 1903, and five years later went into partnership with the late Mr. S. Baker in the Eastergate Square Pharmacy, becoming the owner of the business on the latter's retirement in 1913. He leaves a widow, two sons, who are in the business, and one daughter.

FAIRCLOUGH.—Cremation took place at Golders Green, London, on August 4, of Mr. Revell Anthony Fairclough, director of Lennon, Ltd., whose death was announced in the *C. & D.*, August 6, p. 125. Among those attending were Mr. and Mrs. Percy Fairclough (son and daughter-in-law), Mrs. E. M. Kershaw (daughter), Mr. G. Needham, Dr. T. Hartigan, Dr. and Mrs. T. Matheson Ness, Mr. M. L. Hawker, Mrs. Skinner, Mr. I. Barkhuysen (London manager of Lennon, Ltd.), Mr. F. S. H. Farmer, Lieutenant-Colonel S. F. Freyer, Mr. C. D. Kershaw, Mr. J. W. P. Rawlins, Mr. F. H. Wordsworth, Mr. Charles Dobson, Mr. W. Arbuthnot Lane, Mr. A. C. Cartwright (Kaylene, Ltd.), Mr. P. J. A. Cathcart and Mr. H. Phippard (Parke, Davis & Co.), A. Searle, Miss Beaton, Mrs. E. Lillingston, Mr. George Haye, and all the London staff of Lennon, Ltd.

HORTON.—Recently, Mr. James Alfred Horton, chemist and druggist, Bucksburn, Aberdeen, aged eighty-seven.

HULME.—Recently, Mr. Richard Gleave Hulme, L.D.S., Ph.C., Roseneath Avenue, Winchmore Hill, London, N.21. Mr. Hulme passed the Minor examination in 1871 and the Major two years later. He subsequently gained considerable experience abroad, prior to opening a pharmacy in Ebury Street, London, S.W. Later he gave up pharmacy and devoted himself entirely to dentistry.

MEDLEY.—Suddenly, on August 5, at 325 Barnsley Road, Sheffield, Grace, the wife of Mr. Fred Medley, M.P.S.

MOONEY.—At the Mater Hospital, Dublin, on July 21, Mr. William Joseph Mooney, M.P.S.I., M.I.C.A., 3 Chapel Street, Dundalk. Mr. Mooney qualified in 1901, and for a good many years carried on a pharmacy in Dundalk. He abandoned this for research work and founded in 1923 Dundalk Chemicals, Ltd. where he was chemist and manager up to a few weeks before his death.

PATERSON.—Recently, Mr. Ernest Livingstone Paterson, M.P.S., 5 Broad Quay, Bristol, aged sixty-three.

ROYCE.—Suddenly, of heart failure, on August 3, Mr. Septimus Royce, Ph.C., Radcliffe-on-Trent, Nottingham, aged sixty. Mr. Royce, who was well-known locally, for some years

had a school of pharmacy in Victoria Street, Nottingham, but closed it soon after the outbreak of war. He then joined the staff of Boots, Ltd., but after a time went into retirement. Later he again commenced business, this time on his own account, at Radcliffe-on-Trent, and was so engaged until his death. The funeral took place there on August 5, when the following pharmacists were among those present: Messrs. H. T. A. Gretton (chairman, Nottingham Branch of the Pharmaceutical Society); F. A. Bates (secretary); H. O. Meek (Boots, Ltd.); Granville Shaw; F. W. Shepherd; C. E. Reynolds, and T. Freeman.

SMITH.—Recently, Mr. Edgar Smith, M.P.S., 90 Dunsmure Road, Stamford Hill, London, N.16. Mr. Smith passed the Pharmaceutical Society's Qualifying examination in 1920.

WATSON.—At Highfield, Peak's Hill, Purley, on August 10, Mr. Charles Henry Watson (chairman of W. Watson & Sons, Ltd., manufacturing opticians, High Holborn, London, W.C.1), aged seventy-two.

Recent Wills

MR. WILLIAM EDWARD HILL, Ph.C., Lincoln, who died on June 6, left £11,760, with net personality £10,900.

MR. JOHN MARK DAWSON, M.P.S., 57 West End Avenue, Harrogate, who died on June 13, left £12,961, with net personality £12,858.

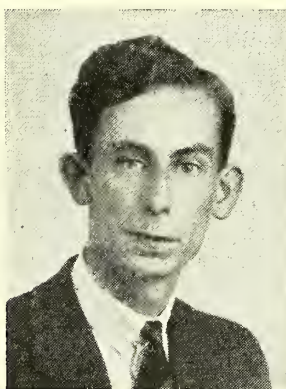
MR. ERNEST EDWIN GASCOYNE DENNIS, chemist and druggist, Paignton, and formerly of Adnitt Road, Northampton, who died on August 26, 1937, left £16,652, with net personality £757.

MR. JOHN HINTON LAKE, 46 Magdalen Road, Exeter, managing director of Hinton Lake & Son, Ltd., chemists, Exeter, who died on June 1, left estate of the value of £49,795, with net personality £28,362.

MR. JOHN WILDEY BENNETT, 16 King Richard Street, Coventry, a director, and formerly works manager, of Wyleys, Ltd., manufacturing chemists, who died on April 18, has left estate of the gross value of £3,072, with net personality £1,866.

Personalities

MR. ROLAND SYDNEY BURR, 5 High Street, Crediton, Devon, who has been awarded the Fairchild Scholarship, 1938 (see p. 169), served his apprenticeship with Milton & Sons, chemists, High Street, Exeter. He will commence his pharmaceutical studies at the Merchant Venturers' College, Bristol, in September. Mr. Ferguson Hartley, 67 Ebor Street, Burnley, Lancs (England prize), was apprenticed to Hartleys, Chemists, Ltd., St. James Street, Burnley. Mr. Victor Douglas Skeeles, 14 Godfrey Avenue, Bangor, co. Down, Northern Ireland (Ireland prize), was apprenticed to Mr. S. H. Forrest, Main Street, Bangor. Miss Alice Elizabeth Robertson, "Holmwood," Torrington Avenue, Whitecraigs, East Renfrewshire (Scotland prize), was apprenticed to Cockburn & Co., Ltd., Howard Street, Glasgow.



MR. ROLAND SYDNEY BURR

MR. GEORGE N. SHELTON, M.P.S., whose marriage is announced on this page, was elected secretary to the Bedfordshire Branch of the Pharmaceutical Society in 1931, and in 1934 became chairman of the Branch. He was chairman of the Hertfordshire and South Bedfordshire Local Association of the Institute of Ophthalmic Opticians in 1935 and was again elected this year. Miss Pickett is a former secretary of the Association.



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B/88 Ingadina oil	W/88 Toxanthine
W/10 John Stumpf's Magic Hoodoo tape	

THE CHEMIST AND DRUGGIST

VOL. CXXIX

August 13, 1938

NO. 3053

CONTENTS

PAGE	PAGE
A Pharmacy Student's Day ... 145	Deaths ... 151
Apprentices and Apprenticeship ... 154	Editorial Article:—
Barbasco Root ... 149	The Educational Position ... 153
Births ... 151	Imperial and Foreign News ... 141
Business Changes ... 139	Information Department ... 152
Company News ... 142	Irish Notes ... 140
Correspondence:—	Legal Reports ... 142
Letters ... 182	Marriages ... 151
Cross Word Puzzle ... 148	News of the Week ... 139
Educational Information:—	Personalities ... 151
Pharmacy ... 155	Prescription Problem ... 165
Books for Students ... 168	Recent Wills ... 151
Medicine ... 170	Retrospect ... 182
Dentistry ... 172	Scottish Notes ... 140
Science ... 174	Topical Reflections ... 141
Optics ... 176	Trade Marks ... 181
Veterinary Surgery ... 178	Trade Notes ... 150
Chiropody ... 178	Trade Report ... 179
	Under Five Pharmacopœias ... 143

The Educational Position

PROGRESSIVE changes in widening the field of knowledge expected by the Pharmaceutical Council from the newly-trained pharmacist have had a disturbing effect on teachers and candidates alike for many years. Fortunately, a reasonably satisfactory limit seems to have been reached and, as chronicled last year in our Educational Number, we are promised stability for a few years, at least, against any further expansion. The subjects and requirements of the Chemist and Druggist Qualifying Examination alone set a very high standard, and judging from the results recorded, the examiners, although kindly and considerate, are evidently critical and not infrequently caustic in their comments on the examinees in the annual reports issued to the Pharmaceutical Council. With changing syllabuses and additional subjects, it could only be expected that training and the results of examination would not balance one another. Some would blame the training, others the candidates, while examiners themselves did not escape criticism, and all the time we might be suffering from too many changes. An organised scheme on the best method of training needed time to settle down. One significant item appears in the report of last July examination in London: "Under Regulations 9 and 16, the Board also prescribed that before re-entry for the examination 128 candidates should undergo a further course of study," which is bound to raise serious thought regarding the nature and duration of that course of study. Will such prescription mean another disturbance in the academic year's training? The Preliminary Scientific examination accounted for 126 referred candidates, half of which included those referred in all subjects, and the rest for different subjects in the examination. It might be noted that forty-eight were prescribed a further period of training in the botany section of biology. In biology as a whole only seven came under

the ban. The candidates referred for a further course of study in the Chemist and Druggist Qualifying Examination were only two. Can such disparity between the science and the specific professional examinations be that the scientific subjects are spread over so many schools that students are fitted into a localised curriculum rather than that laid down by the Pharmaceutical Council? It would be of much help to have an analysis of the training centres for these candidates sent back for a further period to make them scholastically fit to pass.

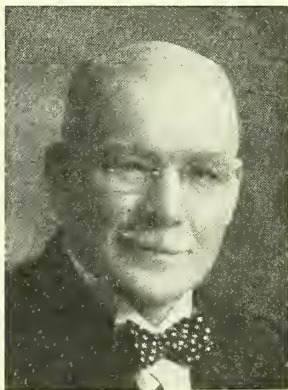
The true evaluation of the changes that have been made cannot fully be made at the present time, as those whose duty it is to examine a year's work of the Boards of Examiners as a whole have yet to make their reports. Reading the last reports that were made, however, it would appear that zoology and physiology both as regards teaching and in examinations had been fairly well accomplished. It was deplored in one report that candidates interpreted physiology questions almost from a clinical point of view, and in zoology there was little skill shown in the methods of dissection. The number of candidates appears to be decreasing, but the results of the examinations do not show any increase in training values. This is probably due to the uncertainty which is introduced by alterations in syllabuses. It is certainly quite clear that the standard of qualification now set for the British examinations in pharmacy is the highest and most exacting in the pharmaceutical world. Whether we shall get better pharmacists for the business of the chemist and druggist or more of those desirous of conquering other fields remains to be seen.

This, the annual Educational Number of THE CHEMIST AND DRUGGIST, presents as is usual concise details as to how the student may take up a career in pharmacy, medicine, dentistry, veterinary medicine and allied subjects such as optics and chiropody. There are also lists of schools, colleges and institutes where instruction in the various subjects may be obtained. In addition to this standard information which is annually revised and brought up to date, we have included several articles which we hope will be found interesting. Mr. J. G. Wallbridge, whose name is well known in pharmacy, gives his views on present-day conditions of training and he draws attention to the various responsibilities of the employer who takes on an apprentice, especially since the appointment of supervising officers. In the article entitled "Under Five Pharmacopœias," the brief views of individuals who have worked with the last five B.P.s towards the qualifying examination are outlined. It is commonplace among succeeding generations of students, to maintain that their forerunners were much more fortunate than they, since examinations are nowadays much more difficult and the various syllabuses have been so enormously extended. This viewpoint is a half-truth. Comparisons are odious, so we are told, and it is inevitable that conditions of life may in fact render an easy programme almost insurmountable. A day in the life of a pharmacy student is entertainingly described and fully illustrated. The value of crosswords is a subject of continued controversy, and while we do not propose to express an opinion on this question the crossword which appears in these pages is more in the nature of a pharmaceutical knowledge test dressed in crossword form. An unusual prescription which offers some difficulty is also published as a test of prescription reading.

Apprentices and Apprenticeship

As a pharmacist with experience in many classes of business, Mr. J. G. Wallbridge gives his views on present-day conditions of training for the entrant into pharmacy.

THE boy or girl who has selected pharmacy as his or her life's occupation will doubtless have been informed that the matriculation certificate must be obtained before the pupilage can be registered by the Pharmaceutical Society; that subsequently definite prescribed courses of lectures have to be taken at a recognised school or college; and for these courses and examination fees a considerable amount of money is necessary; how much will depend upon the nearness of the training school to the district in which the candidate resides, and on whether the candidate be successful or unsuccessful in his first or subsequent entrance to the two examinations, i.e. the Preliminary Scientific—often called Part One—and the Qualifying examination. Apprenticeship and pupilage are generally taken to mean the same thing but, taken separately, they work out as something different, especially in pharmacy. Pupilage in "pure" pharmacy could only apply to training in a hospital dispensary, the openings to which are only limited, and the appointments to be obtained subsequently, when the pupil has finished his course and obtained the qualification diploma, are scarce. Now, apprenticeship to a chemist—and this is still the title by which we are better known than pharmacist—is quite different. Everything has changed vastly during the last three decades, and as the chemist's shop is a business establishment and the proprietor wishes to increase his business, it has to move with the times. THE CHEMIST AND DRUGGIST bears witness to the changed conditions, which are further reflected in the many high-class coloured and illustrated price lists of the various wholesale houses. The youth who becomes an apprentice in a chemist's shop does so in the hope of having sufficient remuneration to live a reasonable and respectable life and become a useful and honourable citizen. At the completion of the agreed term, which should be not less than three years, the apprentice should have a full working knowledge of that establishment; he should be able to serve customers with accuracy and courtesy and have acquired a patience and forbearance with awkward ones; know the prices of the goods most in demand instantly; be able, if necessary, to order suitable quantities of stock and put it away in its arranged place in the pharmacy or warehouse; be watchful of waste either of time or substance; and be possessed of the usual human graces.



MR. J. G. WALLBRIDGE

Amount of Dispensing

This, it may be said, is only shopkeeping. Yet it occupies perhaps 75 per cent. of the average chemist's shop time; and one can visualise how hopeless a college-trained pharmacist or even a hospital-trained pharmacist would be in any average chemist's shop in the land. I am not alluding to the space known as the "dispensing department," which, in many cases, is a small counter at the back. I am not unmindful of the excellent dispensing departments attached to many businesses; one would wish most heartily that there were more dispensing to do, so that many more shops might be better equipped; but we must face facts as they are and make the best of them. At the end of his term the apprentice will be reasonably fit to take a situation as junior assistant in any average chemist's shop.

Classes of Business

There are two ways of entering pharmacy as apprentice: one, by passing the Preliminary Scientific examination before

the apprenticeship commences, the other by waiting until the term of apprenticeship is finished. The point to consider is whether the average youth will be amenable to shop routine work at eighteen or nineteen years of age. It may be interesting to consider the vastly different classes of chemists' businesses throughout the land to which a youth may be apprenticed. The business may be in a country town, a city or a health resort; so that the training establishments may vary vastly from one to another. It is common knowledge that in many country towns commodities are handled that are never touched by city chemists, and probably little dispensing is done. How is the principal of such a chemist's shop to teach his pupil? I assume country chemists will continue to take apprentices. To be honest, the chemist should act as a kind of pharmacy teacher and write out "dummy" prescriptions for the apprentice to prepare, and from time to time coach him in reading prescriptions. Perhaps this sounds Utopian, but it can be done with little expense and certainly with a deal of interest.

Facilities for Training

Before the passing of the National Health Insurance Acts many chemists rarely saw a prescription; yet I have known excellent apprentices turned out from these shops; the mutual goodwill and interest of the master and pupil have found a way to get over the difficulty of dispensing training. Now, the enormous number of Insurance prescriptions written annually and distributed even in remote districts enables the average apprentice to decipher doctors' writing and interpret the more or less brief "dog" Latin taken as directions; to become expert in weighing and measuring drugs and chemicals; and incidentally to become acquainted with pharmaceutical operations. In my opinion an apprentice who enters a chemist's shop early in life, even if he has not passed the Preliminary Scientific examination, is more likely to be happy and useful (and, moreover, if the calling be not to his liking he can arrange to leave it), whilst he is young enough to take up some other; but if his interest be such that he likes the calling it will give him the necessary "push and go" to study in the meantime the subjects of the Preliminary Scientific examination against the time that he can take the full-time courses of lectures; for the slow quiet study will make his future college study much easier, and the knowledge more likely to be retained against the final ordeal of the examination room.

Employer's Responsibility

So far the consideration of the apprentice has occupied the greater part of this article, but the employer who takes an apprentice takes on a considerable responsibility, especially since the appointment by the Society of supervising officers; but presuming the conditions of the pharmacy selected, and its dispensing department, replete with necessary equipment, he has always to be on the *qui vive* to prevent mistakes and accidents.

SOUND FILM EDUCATION.—"At the beginning of the film you see Joan Crawford in a Parisian evening gown adding a solution of zinc salt to caustic potash. Clark Cable, at the other side of the laboratory, is destroying a large wart on his knee with a stick of zinc chloride. Here is an example of the dialogue:

He: Say, the vapour density of this zinc chloride is about 900 deg.

She: Ain't that swell? I guess it's hygroscopic.

He: I'll say it is. Why, it converts starch or cellulose into a soluble compound.

She (gazing at him): Can you use it as a flux for soldering?

He (after a pause, during which he realises that he loves her): Sure, kid. Go right ahead.—Beachcomber in the "Daily Express."

EDUCATIONAL INFORMATION

Training and Qualifications in Pharmacy, Medicine, Dentistry, Science, Optics, Veterinary Surgery, Chiropody

Pharmacy

1—GREAT BRITAIN

DEFINITION.—Under the Pharmacy and Poisons Act, 1933, the titles "pharmaceutical chemist" and "pharmaceutist" are restricted to persons who are registered as pharmaceutical chemists, and the titles "chemist and druggist," "druggist," "pharmacist" or "member of the Pharmaceutical Society" to persons who are registered as pharmacists. It is not permitted to use the title "chemist" in connexion with the sale of goods by retail unless the user is similarly registered. Registration as a pharmacist or as a pharmaceutical chemist is effected as the result of a sequence which includes notification to the Pharmaceutical Society that the applicant has passed an approved Preliminary examination; registration as a student; serving an indentured apprenticeship; passing a Preliminary Scientific examination and, subsequently, one of two Qualifying examinations.

APPRENTICESHIP.—The apprenticeship of a person intending to become a pharmacist is according to an indenture in terms approved by the Pharmaceutical Society, and comprises a minimum of 4,000 hours served in a registered pharmacy or approved institution (for Chemist and Druggist Qualifying examination) or 2,000 hours (for Ph.C. qualification).

EXAMINATIONS.—The Preliminary examination, taken before apprenticeship, is a test of general education, and is of standard equivalent to matriculation at a recognised University. The Preliminary Scientific is an examination in chemistry, biology and physics. The Chemist and Druggist Qualifying examination is in physiology, pharmacognosy, pharmaceutics, pharmaceutical chemistry and forensic pharmacy. The Ph.C. Qualifying examination is in the same subjects as the Chemist and Druggist, but the standard is higher. Fuller details of these examinations and the other matters here summarised are given later.

OPPORTUNITIES.—A registered pharmacist may (1) set up in business for himself; (2) become manager or employee in the retail business of another registered pharmacist or corporate body; (3) take up a position as pharmacist in a hospital or institution; (4) enter the wholesale or manufacturing side as works chemist or in an administrative or other capacity; (5) enter the teaching profession in a pharmaceutical college.

The examinations of the Pharmaceutical Society are written and practical, with an oral test in pharmacy. The syllabus is now stabilised, and no exceptions are allowed without direct application to the Pharmaceutical Council. Zoology and physiology are part of the syllabus and are subjects in the appropriate examinations. It would appear that the form of examination in these subjects has not yet reached finality.

Provision is made to hold the written portions of the Pharmaceutical Society's examinations at convenient provincial centres. The practicals take place in London and Edinburgh only, and are arranged to follow the written as soon as practicable. Students who have passed recognised science exam-

inations equivalent to the Preliminary Scientific have many advantages and a good foundation is laid for future progress. Students who take the Preliminary Scientific early may be included in the same class. Full-time collegiate training is compulsory; the number of hours is specified as so many a week for the required academic terms, and attendance must satisfy the governing authorities. Though matriculation is not the only examination accepted for entrance into pharmacy, it has most in its favour. No practical course of study or approved course of instruction or part thereof undergone before registration as an apprentice or student can be recognised under the regulations. The schools recognised for the training of students to University standard are now reasonably numerous, and no increase is likely. The Preliminary Scientific is on the same basis as the First Science of London University. The only difference between the Ph.C. examination and the B.Pharm. examination is that forensic pharmacy is a subject in the former.

It is recommended that full use should be made of the rules for practical course of study appended to the Draft Articles of Pupilage, while eligible students are advised, as a sound method of beginning a career, to train and enter for the scholarships now available.

Preliminary Examinations

The first step on deciding to take up pharmacy is to pass a Matriculation or other examination admitting to a course for a degree of any university in Great Britain or other university approved by the Pharmaceutical Council, or pass at one sitting the medical preliminary of the College of Preceptors or the Educational Institute of Scotland, of which mathematics must be one of the subjects. If before April 1, 1936, a

Preliminary was passed which included English, mathematics, a language other than English, an additional language or higher mathematics, chemistry, physics, botany, zoology, biology or geology, the Registrar is empowered to accept the certificate if passed at not more than two sittings.

A person over twenty-five years of age may apply to be admitted to a special Preliminary examination, but he must furnish such particulars of his education as the Council of the Society may require. The fee, including registration as apprentice or student, is £4 4s. In general terms, certificates submitted must be of equal value to those specified in the list, which is given below. Any student entering pharmacy and desirous of obtaining a university degree must pass its matriculation examination.

CERTIFICATES ACCEPTED

The following is a list of the principal certificates accepted:—

The Final examination for a degree of any university in the United Kingdom approved by the Council.

Universities of Birmingham, Leeds, Liverpool, Manchester and Sheffield.—Joint Matriculation examination. School Certificate examination.

University of Oxford.—Responsions.

Chemist and Druggist and Pharmaceutical Chemist Qualifications (in brief)

1. Notification and registration with the Pharmaceutical Society of having passed an approved Preliminary examination.
2. Apprenticeship (indentured), of 4,000 or 2,000 hours (for Ph.C.) to include practical training set out in appendix to indentures.
3. Preliminary Scientific examination in chemistry, physics, and biology after attendance at recognised institution for systematic instruction. (May be taken before apprenticeship.)
4. On completion of apprenticeship and passing of Preliminary Scientific examination attendance at recognised institution for approved course of instruction in pharmaceutical chemistry, pharmacognosy, pharmaceutics, physiology, and forensic pharmacy (duration varying according to examination to be taken).
5. At age of 21 or after, Chemist and Druggist Qualifying examination in pharmaceutics, pharmaceutical chemistry, pharmacognosy, physiology, forensic pharmacy; or Pharmaceutical Chemist qualification in same subjects (higher standard).

PHARMACY

Educational Information

PHARMACY

University of Cambridge.—Previous examination.

University of Durham.—Matriculation examination. First School Certificate examination. Higher School Certificate examination.

University of London.—Matriculation examination. General School Certificate examination. Higher School Certificate examination.

Victoria University of Manchester, University of Birmingham, University of Liverpool, University of Leeds, and University of Sheffield, Joint Matriculation Board of.—Matriculation examination, School Certificate examination. Higher School Certificate examination.

University of Bristol.—Matriculation examination, School Certificate examination, Higher School Certificate examination.

University of Wales.—Matriculation examination.

Scottish Universities Entrance Board.—Preliminary examination.

Queens University of Belfast.—Matriculation examination.

National University of Ireland.—Matriculation examination.

Oxford and Cambridge Schools Examination Board.—School Certificate examination, Higher School Certificate examination.

Oxford Delegacy of Local Examinations.—School Certificate examination, Higher School Certificate examination.

University of Cambridge Local Examination Syndicate.—School Certificate examination, Higher School Certificate examination.

Central Welsh Board.—School Certificate examination, Higher School Certificate examination.

Scottish Education Department.—Leaving Certificate examination.

Ministry of Education of Northern Ireland.—Senior Certificate examination.

Department of Education of the Irish Free State.—Leaving Certificate examination.

College of Preceptors.—Senior examination, Medical Preliminary examination.

Educational Institute of Scotland.—Medical Preliminary examination.

And matriculations of various universities throughout the Empire.

College of Preceptors, Bloomsbury Square, London, W.C.1.—Examinations for certificates are held four times a year at local centres, a list of which is issued two months before each examination. Entry forms, obtainable from the secretary of the College, must be filled up and returned six weeks before the day appointed for the examination. On the form the candidate indicates the subjects in which he desires to be examined, those required for pharmaceutical students being mentioned at the beginning of this section. The fees are best sent with the entry forms, but, if not, must be paid twenty-eight days before the examination begins. Candidates should obtain the regulations for examinations (post free) from the Secretary of the College, as the books to be studied in some of the subjects vary from year to year. A complete set of papers at previous examinations can be obtained from the College at 2s. 2d. post free.

Educational Institute of Scotland (Registrar's Office, 47 Moray Place, Edinburgh). Examinations are held four times a year in Edinburgh, Glasgow, Liverpool, London and Dublin. The fee is £1 10s., which should be sent to the Registrar with the form of application duly filled in. The Institute issues a calendar giving the regulations, price 7d. post free, and examination papers, price 1s. 2d. post free, obtainable from the Registrar.

Registration

A certificate of having passed a preliminary examination complying with the conditions having been obtained, it should be sent to the Registrar, the Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1, accompanied by a fee of £2 2s., the student being then registered as an "apprentice or student." Registration is insufficient in itself. Articles of pupillage, copies of which can be obtained from the Registrar at the same time, must be taken up and filed. Apprenticeship

may be served with a pharmacist, firm or body corporate, or in an institution recognised by the Council of the Pharmaceutical Society, or in the laboratory of a wholesale house subject to the same approval. A practical course of training is now mapped out and is attached to the indentures, of which it is thus an integral part. The number of hours required to be spent in an open shop or approved institution is 4,000. A recognised course of study must be taken before the Preliminary Scientific examination can be undertaken; a further period is necessary for the Qualifying examination.

The Technical Examinations

The Board of Examiners sits in London and Edinburgh in January, April, July and October for the purpose of conducting the statutory practical and any oral examination recognised. Prior to these times the written portion of the examinations must be taken at the appropriate centres. For the Pharmaceutical Chemist examination the Board sits in January and July only. The first part, called the Preliminary Scientific, includes biology, chemistry and physics. The second part includes pharmacognosy, pharmaceuticals, pharmaceutical chemistry, physiology and forensic pharmacy. Its specific name is the Chemist and Druggist Qualifying examination. For the purpose of simplification the Pharmaceutical Chemist qualification is dealt with separately under that heading.

1. Preliminary Scientific

The Preliminary Scientific should be taken between the ages of eighteen and twenty-one, and may be taken before apprenticeship; the Qualifying examination can only be taken after the age of twenty-one has been reached.

The examination is the same whether it is intended to become a chemist and druggist or a pharmaceutical chemist, and extends over three and a half days.

The fee payable for the Preliminary Scientific is £6 6s., and the conditions are: The candidate must have spent the requisite academic terms in an institution approved for the purpose by the Pharmaceutical Society's Council. If a candidate is referred in one subject only he may re-enter for that alone. Two "refers" are equivalent to a failure in all. In addition, the Board of Examiners has now the power to impose further conditions (periods of study) on those who failed to satisfy the Board. The re-examination fee is £4 4s. A candidate who has failed to attend an examination at the appointed time must pay an additional fee of £2 2s. unless prior to the examination a medical certificate of unfitness is lodged with the secretary of the Pharmaceutical Society.

SYLLABUS

The official syllabus of the Pharmaceutical Society for the Preliminary Scientific is set out, though examinations in lieu of this may be taken in approved institutions.

CHEMISTRY

An elementary knowledge is required of the following subjects:—

(a) The chief characteristics of chemical action, the distinction between elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; kinetic theory of gases; theory of dilute solutions; ionisation; conductivity; acids, bases; solubility product; osmotic pressure; Raoult's law; chemical equilibrium and law of mass action; endothermic and exothermic reactions; equivalent weight; atomic weight and molecular weight; chemical formulae and nomenclature; valency; the distinction between metals and non-metals, and the periodic classification of the elements. (b) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds: Hydrogen, oxygen, ozone, water, hydrogen peroxide, chlorine, bromine and iodine and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid, nitrogen, ammonia and ammonium compounds, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, hydrogen sulphide, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus, silicon, silica, boron, boric acid. (c) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the general methods of extracting and the chief properties of the undermentioned metals, also the modes of preparation and properties of their principal

PHARMACY

Educational Information

PHARMACY

compounds: Potassium, sodium, lithium, barium, strontium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, nickel, cobalt, arsenic, antimony, tin, copper, cadmium, bismuth, lead, silver, mercury, gold and platinum. (d) Carbon, its oxides; methane, ethylene and acetylene. The methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulae. The candidate is expected to solve simple problems relating to the weight and volume under different conditions of temperature and pressure of elements and compounds concerned in chemical reactions.

The whole of the syllabus in chemistry is to be treated in an elementary manner and as far as possible experimentally.

Practical Examination.—The candidate is required to exhibit a practical acquaintance with the methods of preparing the more important inorganic substances. To identify by chemical tests the more important non-metallic elements and their compounds, as well as the metals and salts indicated in the foregoing list. To analyse a mixture containing not more than two basic and two inorganic acid radicles. To be able to weigh accurately on a standard analytical balance involving the use of a rider. To show a knowledge of the principles of volumetric analysis and to prepare, standardise and use volumetric solutions of inorganic acids, alkalis, potassium permanganate, and silver nitrate.

Chemistry is the subject which has been fairly well done in recent examinations, indicating an improvement, not only in teaching, but also in those taught. Reports from the examiners on the candidates' work still show that elementary questions are often badly answered; on the other hand, a marked advance has been shown in the art of expression. From the last report of the examiners it would appear that stock answers are still given by candidates, that many calculations are not done accurately and, in titrations, though the method employed is well carried out, in working out results arithmetical mistakes are made. It is well to impress on students the need for acquiring the habit of accuracy.

BIOLOGY

This subject comprises botany as Part I and zoology as Part II.

PART I—BOTANY.—The form and function of the roots, the stem and the leaves of a green herbaceous plant and of a woody perennial plant and the effect of environment on their anatomy. The modifications of plant organs for special functions. The structure of the plant cell. Cell division. The structure, arrangement and functions of the tissues of Angiosperms. The structure of a typical flower and the function of its various parts. The fruit. The structure, dispersal and germination of seeds. The elementary facts of growth and nutrition, including photosynthesis and respiration, and a consideration of the physiology of heterotrophic plants. The commoner foods found in plants; their digestion and utilisation. A general knowledge of the chief divisions of the vegetable kingdom as exemplified by a study of the life history, structure and reproduction of the following:—

Chlamydomonas, *Spirogyra*, *Fucus*, *Mucor*, *Agaricus*, *Dryopteris filix-mas*, *Pinus* and an Angiosperm. The principles of taxonomy as illustrated by a study of the following families of Angiosperms: *Ranunculaceæ*, *Leguminosæ*, *Umbelliferae*, *Solanaceæ*, *Compositæ*, *Liliaceæ*.

Practical Examination.—The dissection, examination and description (exclusive of identification) of any plants or parts of plants. The making of microscopical preparations and the description of preparations illustrating the anatomy of plants. The conduct of, or comment on, experiments illustrating the fundamental life-processes of the plant.

PART II.—ZOOLOGY.—The structure and properties of the cell and the general characters and functions of the tissues including the epithelia, blood and lymph, and the nervous, muscular, connective and skeletal tissues. The general structure, physiology and life history of *Amæba* and *Paramæcium*. A comparison of these with plants. An outline of parasitism as illustrated by the life history of the malarial parasite and liver fluke. The general structure, vital activities and life history of *Hydra* and *Lumbricus*, as illustrative of diploblastic and triploblastic invertebrata. The general structure and life history of *Blatta* as illustrative of insect organisation and development. The structure, life history and elementary physiology of vertebrata as illustrated by *Rana* (excluding the skeleton) and *Lepus*. The general phenomena of sexual and

asexual reproduction of animals. The history and characters of the germ cells, the chief types of segmentation of the fertilised ovum. The outline of the embryology of the frog and the chick. The elementary facts of heredity, variation and evolution.

Practical Examination.—The dissection, microscopical examination and description of specimens or parts of the animals mentioned above.

The comments of the examiners on the results of the first examination were favourable to the candidates. Two questions, at least, had to be answered on zoology, while the practical included a simple dissection. Though several candidates showed ineffective training, it is satisfactory that 60 per cent. passed in the zoology section.

PHYSICS

Velocity, acceleration, mass, momentum, force, work, energy, gravity, centre of gravity; simple machines; pressure in liquids, the siphon, water pumps; principle of Archimedes. Boyle's law, compression and exhaust pumps; atmospheric pressure; surface tension; diffusion, osmosis. Temperature; thermometry; changes in volume of solids, liquids and gases with alterations of temperature; quantity of heat, specific heat; change of state, latent heat; melting and boiling points; vapour pressure; hygrometry; conduction, convection and radiation; relation between heat and work. Photometry; laws of reflection and refraction; formation of images by plane and spherical mirrors and lenses; the eye as an optical instrument; defects of vision and their correction by lenses; action of prisms on light; dispersion, colour. Properties of magnets; magnetic field, lines of force; law of force; the earth as a magnet. Simple phenomena of static electricity; potential, induction, distribution of electrification of conductors; influence machines; capacity; principle of condenser, Leyden jar. Electric currents, magnetic, chemical and heating effects; primary and secondary cells; current strength; electromotive force; Ohm's law; resistance, specific resistance; galvanometers, ammeters and voltmeters; metre bridge; potentiometer; induced currents.

Practical Examination.—Simple exercises illustrating the above, including:—Use of vernier, screw-gauge, balance, hydrometer; measurement of time and oscillation. Determination of volumes by weighing in air and water; densities, specific gravities of solids and liquids; verification of Boyle's law. Determination of coefficients of expansion, melting points, boiling points, specific heats, latent heats, dew point. Tracing paths of rays; determination of refractive indices by slab and prism; focal lengths of mirrors and lenses. Tracing lines of force. Measurement of time of swing of a magnet; comparisons of magnetic moments and of field strengths. Comparison of electromotive forces and resistances. Use of galvanometer, ammeters and voltmeters. Electrolytic measurements.

It is interesting to note the reaction of the examiners to the work of the examinees. During the last year they again admit that the standard of the theoretical and practical work has been maintained. It is satisfactory to read in the reports that badly trained candidates are disappearing. The points that have been made in comments during the past few years have received more attention with more pleasing results in the examination.

EXTERNAL EXAMINATIONS IN PHARMACY

Apart from the examinations of the Pharmaceutical Society's examiners as set out in the above syllabus, there is a proviso for the acceptance of certificates in lieu of the Preliminary Scientific. They are: (1) The Final or Intermediate examination of any University in England and Wales, and the corresponding examinations of any University in Scotland or any other university, providing the examinations have been approved by the Council of the Society. The first or subsequent examination for any degree or diploma recognised by the General Medical Council, providing the examination has been approved by the Council of the Society. (2) The Higher School Certificate examination conducted by an examining body approved by the Board of Education for subjects taken as principal subjects. The fee on acceptance of these certificates is £2 2s., and subsequently the same regulations apply as to the Pharmaceutical Society's examinations.

PHARMACY

Educational Information

PHARMACY

2. Chemist and Druggist Qualifying

Having passed each subject in the Preliminary Scientific and completed 4,000 hours in an open shop, approved public institution, or approved wholesale chemist's laboratory, and the necessary collegiate training for the Final examination, and reached the age of twenty-one, the candidate should send a birth certificate, together with another fee of £12 12s., and the necessary declaration of having completed the conditions, on the prescribed form, to the Registrar. The examination is conducted on similar lines, and success in all subjects entitles the candidate to be registered as a chemist and druggist by examination on payment of the appropriate annual fee.

All candidates have the choice of being examined in the practical portion of the examination in London or Edinburgh, and they are required to state the venue desired when filling up the entrance form. The candidate's books showing the practical work in all subjects must be taken to the examination for inspection by the examiner should he so desire.

The syllabus set out below is that now in being, though suitable arrangements are made for examination under the old syllabus for those who are entitled to be so examined owing to their previous entry.

SYLLABUS

PHARMACOGNOSY

The cultivation, collection, preparation for the market, the commerce in and the storage of crude drugs as illustrated by the drugs named in the list below.

The macroscopical characters, the biological and geographical sources, the commercial varieties and adulterants, the constituents and the qualitative chemical tests for the following drugs:—

Acacia	Cinchona	Lobelia
Aconitum	Cinnamomum	Mel
Agar	Coca	Myristica
Aloe	Coccus	Myrrha
Amylum	Colchici Cormus	Nux Vomica
Anethum	Colchici Semen	Opium
Anthemis	Colocynthus	Podophyllum
Asafoetida	Colophonium	Podophyllum
Aurantii Cortex	Copaiba	Indictum
Balsamum Peru-	Coriandrum	Prunus Serotina
vianum	Creta	Quassia
Balsamum Tolu-	Digitalis Folium	Quillaia
tanum	Dryopteris	Rheum
Belladonnae Folium	Filix-mas	Savin
Belladonnae Radix	Ergota	Scilla
Benzoinum	Feniculum	Senega
Buchu	Gelatinum	Sennae Folium
Calumba	Gentiana	Sennae Fructus
Cannabis	Glycyrrhiza	Serpentaria
Cantharis	Hamamelis	Stramonium
Capsicum	Hyoscyamus	Strophanthus
Cardamomum	Ipecacuanha	Styrax
Carum	Ipomœa	Tamarindus
Caryophyllum	Jalapa	Tragacantha
Cascara Sagrada	Krameria	Valeriana
Catechu	Limonis Cortex	Zingiber
Cera Flava	Linum	

The extraction of fixed and volatile oils as illustrated by the following:—Castor oil, clove oil, cod-liver oil, olive oil. The more important classes of constituents of crude drugs with reference to their behaviour when used in making pharmaceutical preparations and when dispensed. The microscopy of starch, calcium oxalate and epidermal trichomes and the micro-chemical tests for cellulose, lignin, the materials used for filtering and the fibres used for surgical dressings.

Practical Examination.—The candidate will be required to examine, dissect, identify and describe, in the entire or broken condition, the drugs mentioned in the above list, by means of their macroscopical characters, by qualitative chemical tests, and by the microscopy of calcium oxalate and epidermal trichomes. To examine fibres and fabrics used for surgical dressings, materials used for filtration, and starch.

The net dealing with characteristics of certain drugs is more widely drawn, and it is evident that something more than

recognition and a knowledge of a few diagnostic characters will be required. In addition, there is the introduction of fibres and fabrics used for surgical dressings, materials used for filtration, and starch. The examiners and Privy Council visitors still define the principal causes of failure in this subject as due to weakness in theory. Answers, they say, frequently show a lack of precision, while geographic knowledge is certainly weak. It is satisfactory to read a tribute to improved practical work.

PHYSIOLOGY

This subject follows on pharmacognosy, and the same remarks apply. Anyone trained under the old syllabus will not be required to take this subject until after March 1, 1939. The syllabus sets out:—

The structure of the blood, coagulation; the transport of oxygen and carbon dioxide. The properties of cardiac, striated and unstriated muscle. The mechanism of the heart and valves. The coronary circulation. The effect of inflow and rate on the output of the heart. The importance and maintenance of the blood pressure. The structure of the glands of internal secretion. The effects following their removal, and the properties of extracts prepared from them, including (a) the pituitary body, anterior and posterior lobes, (b) the thyroid and parathyroid, (c) the pancreas, (d) the suprarenals, (e) the testicles and ovaries. The physiology of the alimentary tract, including a knowledge of the control of salivary, gastric, pancreatic and biliary secretion, and of the movements of the alimentary tract. The chemistry of the common food substances, meat, eggs, milk and bread, and the properties of the digestive juices and bile.

The results in the examinations that have so far been held seem to please the examiners, though one or two pungent remarks are made. Candidates are said to exhibit an intelligent grasp of the subject. Later on, one report states there is a tendency to introduce irrelevant matter which must consume time for which no marks can be awarded. Some students treat the subject too much from a clinical aspect. A more rigid observance of the syllabus seems to be desirable.

PHARMACEUTICS

The history of pharmacy from A.D. 1600. The principles involved in pharmaceutical operations, including a consideration of the pharmaceutical application of the following:—

Vapour pressure, solution, ionisation, osmotic pressure, hydrolysis, viscosity, surface tension, distillation, sublimation, colloidal state. The galenical preparations included in the British Pharmacopœia, their biological and chemical standards, changes liable to occur in these preparations, and the means of preventing them. Enzyme action. The biology of bacteria in so far as it bears on the preparation of sterile solutions, vaccines, and on the performance of sterility tests. The preparation of such serums, vaccines and hormones as occur in the British Pharmacopœia. The compounding and dispensing of medicines. Surgical dressings and their standards. The interpretation of prescriptions and the translation of Latin prescriptions into English. Posology.

Practical Examination.—The candidate must be prepared to conduct ordinary pharmaceutical operations, including the making of the galenical preparations in the British Pharmacopœia, the dispensing of prescriptions, the making of sterile preparations; the detection of unusual doses and the completion of his preparations in a proper manner.

Reports on this subject, which is of primary importance for the practising pharmacist, vary considerably. "One stated simply 'The general standard was satisfactory, the written portion being well done. Such weakness as was shown was mainly in the practical work.'" Another report states that candidates are well versed in modern developments of pharmacy, and further goes on with "The written papers on Pharmaceutics, Paper II, are not so well done." Practical dispensing appears to be a weak point from the examiners' point of view, and the Pharmaceutical Council visitor states the percentage of rejections in pharmaceutics is high, and further he lays it down that "All candidates should have a very thorough knowledge of pharmaceutics, both theoretical and practical." There is now a book dealing with the history of pharmacy which is quite interestingly written and should prove to be an assistance to the student.

PHARMACY

Educational Information

PHARMACY

PHARMACEUTICAL CHEMISTRY

The general principles of inorganic chemistry with particular reference to those elements and compounds in frequent use in pharmacy: their preparation, properties and purification for pharmaceutical use. The general principles of organic chemistry involving the main types of aliphatic substances and the simpler aromatic compounds containing the benzene nucleus, with special reference to those of pharmaceutical importance. Pharmaceutical standards of purity and chemical tests of conformity therewith. The principles involved in the practical work of this syllabus.

Practical Examination.—The candidate will be required to show practical familiarity with the following in reference to their application to substances in frequent use in pharmacy:

The preparation of simple organic compounds such as chloroform, ether, acetaldehyde, ethyl acetate, nitrobenzene and acetanilide. The identification by chemical tests of the salts of the simple organic acids; the identification or reference to class of simple organic compounds. The performance of the simple chemical tests used to limit the adulterations and contaminations which may occur in the inorganic substances, and in the simple organic compounds of pharmaceutical importance. The quantitative determination of quinine in iron and quinine citrate and of the alkaloid content of simple solutions of alkaloidal salts. Simple gravimetric analysis illustrated by the determination of moisture limits, sulphates, aluminium and iron. The volumetric determinations of simple chemical substances and of such when present in simple solutions. Alkalinity of glass. The use of the nitrometer illustrated by the estimation of organic nitrites.

This was one of the subjects that showed change, and it is gratifying to read after first results that "Questions on organic chemistry and analytical procedures were well done, though there was room for improvement in inorganic chemistry. Practical work shows an advance, though the preparation of volumetric solutions was not always accurately carried out. The results of alkaloidal assays were quite good."

FORENSIC PHARMACY

The candidate will be required to possess such information concerning the following enactments and the regulations made under them as is applicable to the practice of pharmacy in shop and hospital: The Pharmacy and Poisons Acts, 1852 to 1933, the National Health Insurance Act, 1924, the Dangerous Drugs Act, the Apothecaries Act, the Medicine Stamp Act, the Shops Acts (sections dealing with the sale of medicines), the Weights and Measures Acts, the Protection of Animals Act, the Sale of Food and Drugs Act, the Registration of Business Names Act, the Venereal Disease Act, the Therapeutic Substances Act, and the relevant sections of the Acts relating to the use of stills, the sale of spirits (including methylated spirit and medicated wines), the sale of abortifacients.

A measure of general satisfaction was expressed by examiners of both Boards on forensic pharmacy answers. The subject is complicated enough to bring about a candidate's downfall. One thing is good and that is that the C. & D. Poisons Guide remains a source of information easily assimilated.

Summary of Examination Fees

Apart from the fee for collegiate courses, the following are payable by pharmacy students:—

Registration as student, £2 2s.

Preliminary Scientific, £6 6s.

Re-examination in case of failure, £4 4s.; a person who has failed to attend, £2 2s.

Chemist and Druggist Qualifying examination, £12 12s.

Re-examination in case of failure, £6 6s.; a person who has failed to attend, £3 3s.

Pharmaceutical Chemist Qualifying examination, £12 12s.

Pharmaceutical Chemist Qualification

Those about to enter the calling should be informed as to the conditions for a chemist and druggist qualification and of the relative value of the pharmaceutical chemist qualification, and, under competent advice, parents and guardians should weigh carefully the advantages and disadvantages of the method of procedure. Two ways are open to gain the latter, one through the examinations of the Pharmaceutical Society and the other through the University of London or any other recognised university. The training and examinations of London University include both internal and external students. The entrance and Preliminary Scientific examinations are the same as those of the chemist and druggist qualification or such as are accepted by the particular university, and after registration the question of apprenticeship before or after the Preliminary Scientific examination should be settled. The process of passing from the chemist and druggist to the pharmaceutical chemist is now fairly straightforward. The examinations for the pharmaceutical chemist qualification are held in January and July. The regulations require apprenticeship under similar conditions to those of the chemist and druggist. The course of training in college consists of two sessions (two academic years) of not less than twenty-five hours weekly of three terms in pharmaceutical chemistry, pharmacognosy, pharmaceuticals, forensic pharmacy and physiology.

The Pharmaceutical Chemist examination, by rearrangement of the syllabus, occupies eight days against nine under the old curriculum. Physiology has been introduced, theoretical and practical, but all those who had presented themselves for examination before June 1, 1937, need not take physiology. This concession lapses after March 1, 1940.

SYLLABUS

PHARMACEUTICAL CHEMISTRY

The history of chemistry from 1750 A.D.

The principles of physical chemistry treated in an elementary manner with references to their pharmaceutical application, including the physico-chemical properties of gases, liquids and solids; equilibria and the law of mass action; catalysis; thermo-chemistry; the properties of dilute solutions; osmosis; molecular weight determination; colloidal state; adsorption and absorption; electrical conductivity; ionisation; hydrolysis; strength of acids and bases; indicators; the determination and significance of pH values; refractivity; optical rotation; surface tension and viscosity; boiling points and boiling ranges; distillation of liquid mixtures. The general principles

Syllabus (in brief) for
Chemist and Druggist Examinations

1. PRELIMINARY SCIENTIFIC

BIOLOGY.—1. *Botany*: Morphology, including anatomical structure; physiology, reproduction; physical effects of light and gravity, classification of plants. 2. *Zoology*: Cell and general characters; functions and kinds of tissues; life-history of amoeba; paramoecium; hydra; lumbricus; blatta. Parasitism; heredity; evolution.

CHEMISTRY.—Chemical principles; non-metals and their compounds; metals; formation of oxides and salts; knowledge of estimation of carbon; hydrogen, nitrogen; simple chemical problems.

PRACTICAL CHEMISTRY.—Analysis of salt containing not more than two metals and two acid radicals; identification and knowledge of specified metals and salts; principles of volumetric analysis.

PHYSICS.—Conservation of energy; gravitation; diffusion, vapour densities; thermometer, barometer; specific gravity; mass, force, energy, work; forms of matter; temperature and pressure; light: reflection and refraction; correction of vision; static and current electricity cells.

2. QUALIFYING

PHARMACOGNOSY.—Pharmacopoeial drugs and others specified; recognition, classification; sources, structure, chemical and physical characteristics; active principles.

PHYSIOLOGY.—Blood, coagulation; varieties of muscle; heart and its valves; glands and secretion; coronary circulation; blood pressure; alimentary tract.

PHARMACEUTICS.—Laboratory methods and appliances; preparation and production of galenicals; knowledge of assay; sterilisation; dispensing and prescription reading and translation.

PHARMACEUTICAL CHEMISTRY.—Preparation and properties of specified medicinal organic compounds; pharmacopoeial tests for impurities, assay, and volumetric determinations.

FORENSIC PHARMACY.—Knowledge of schedules, conditions and precautions of sales of poisons, and laws affecting the keeping of open shop.

PHARMACY

Educational Information

PHARMACY

of inorganic chemistry with particular reference to those elements and compounds in frequent use in pharmacy; their preparation, properties and purification for pharmaceutical use. The general principles of organic chemistry involving the main types of carbon compounds extended by a more detailed treatment of those compounds in frequent use in pharmacy and including the fixed oils and fats, waxes; soaps; glycosides; ureides and urethanes; heterocyclic compounds and the characters, methods of extraction, preparation and purity of the important alkaloids; purines; proteins; alicyclic compounds, terpenes and the more important constituents of essential oils and related products; medicinal dyes, organometallic compounds; the crystallisable hormones and vitamins; synthetic drugs. The principles of qualitative analysis of chemical substances and the chemical assay processes of crude drugs and pharmaceutical preparations. Pharmaceutical standards of purity and chemical tests of conformity therewith.

Practical Examination.—The candidate will be required to show practical familiarity with the common methods of experiment, including the following and their application to substances in frequent use in pharmacy:—

The preparation of inorganic and organic compounds. The identification, or reference to class, of substances in the pure state or in admixture; the detection and identification of the impurities which they may contain. The determination of the physical constants used as criteria of purity. The quantitative analysis of inorganic and organic substances; the quantitative determination of the active constituents in drugs, pharmaceutical preparations, essential oils and other products that are amenable to chemical assay.

Chemistry from all parts of the old syllabus has been included; a comparison with previous layouts will show that the subject has been brought in closer touch with pharmacy and greater details given, but the margins are wide. The examination consists of two written sessions and two practical, and the usual custom to consult books in the practical remains, as well as bringing laboratory books.

PHARMACEUTICS

The history of pharmacy from A.D. 1600.

The syllabus and examination in pharmaceutics harmonises with that of the Chemist and Druggist examination. The dispensing of medicines could be finished in the first year, which would ease the stress of the final examination. The syllabus on pharmaceutics in the Chemist and Druggist course should be consulted, as only the following items are additional for the pharmaceutical chemist qualification. It is now practical to pass from the chemist and druggist qualification to that of Ph.C. if anyone is so desirous.

The principles involved and the apparatus used in pharmaceutical operations in general use by practising pharmacists and by manufacturers. The galenical preparations in frequent use in pharmacy, changes liable to occur in these preparations and the means of preventing them; enzyme action. The biology of bacteria in so far as it bears on the preparation of sterile solutions and of vaccines, and on the performance of sterility tests. The preparation and standardisation of serums, vaccines, hormones and vitamins; the biological methods of standardisation of galenicals. The compounding and dispensing of medicines and the preparation of medicated surgical dressings. Surgical dressings and their standards. The interpretation of prescriptions and the translation of Latin prescriptions into English. Posology. The candidate will be required to have such a knowledge of French or German as will enable him, with the aid of technical dictionaries, to translate into English passages from either French or German pharmacopœias.

Practical Examination.—The candidate must be prepared to conduct ordinary pharmaceutical operations, including the making of galenical preparations, the dispensing of prescriptions, the detection of unusual doses, and the completion of his preparations in a proper manner; to prepare sterile solutions, to perform tests for sterility; to prepare bacterial vaccines, including the enumeration of organisms in a suspension.

PHARMACOGNOSY

The syllabus for the written examination in this subject corresponds with that for the Chemist and Druggist Qualifying

examination except that instead of "the microscopy of starch, calcium trichromes and the micro-chemical tests for cellulose, lignin," the following is substituted:—

The methods used for the microscopical examination of crude drugs, including the isolation and identification of tissues and cells. Micro-chemical tests for tissues and cell contents. Microscopical measurements. The valuation of crude drugs.

Practical examination.—The candidate must be prepared:—To recognise, in the entire condition, crude drugs in frequent use in pharmacy. To examine, dissect, identify and describe, in the entire or broken condition, the drugs mentioned in the above list, by means of macroscopical qualities and tests. To prepare for microscopical examination any of thirty-one of the crude drugs mentioned in the list (see syllabus for Chemist and Druggist examination), to describe their powders and to detect adulteration in them. To examine fibres and fabrics used in surgical dressings, and materials used for filtration

PHYSIOLOGY

The first examination on this subject was in July 1936, and consisted of one written paper and one practical. The material set out below is in addition to that given under the Chemist and Druggist syllabus. It should be noted that some pharmacology is introduced here, and there is one session of practical work in the examination.

The enumeration of red cells in the blood.

The nervous control of the heart and the function of the carotid sinus.

The control of the blood supply to the organs of the body.

The mechanism of respiration and its control; action of vagus; the effect of (a) oxygen, (b) carbon dioxide, (c) nitrogen, and (d) carbon monoxide.

The physiology of the skin, loss of heat and sweating; the kidney including the chemistry of urine. Detection and estimation of principal, normal and abnormal constituents.

Nerve cells and fibres. The synapse. Spinal reflexes. Function of medullary centres. Effect of removing the cerebrum. Motor cortex and pyramidal tracts. Function of corpus striatum. General arrangement of fibres entering and leaving the spinal cord, including the sympathetic chain and the peripheral connexions of the vagus and sympathetic nerves.

The physiology of mammalian reproduction including the implantation of the fertilised ovum and the function of the placenta.

The action of the following drugs:—chloroform, ether, alcohol, bromides, hyoscine, atropine, morphine, strychnine, caffeine, digitalis, nitrates, acetylsalicylic acid. The general mode of action of bitters, purgatives, emetics and expectorants, astringents, antacids.

Practical Examination.—The candidate must be prepared:—

To recognise and describe with diagrams, microscopic preparations of any tissues or organs mentioned in the foregoing syllabus. To show his acquaintance with the methods employed for the demonstration of fundamental physiological processes, as laid down in the foregoing syllabus, and to carry out such chemical manipulations or simple experiments as are comprised therein.

FORENSIC PHARMACY

In this subject there is no variation from the requirements for the Chemist and Druggist examination.

SUPPLEMENTARY QUALIFICATIONS

Diploma in Biochemical Analysis

A diploma is granted by the Pharmaceutical Society in this subject after a systematic course and subsequent examination. The fee for the examination is £5 5s.; the examination is held in London and Edinburgh in April of each year, the last day of entry being March 1. The period for an approved course of instruction extends over three months, or a part-time course over six months. Proof must be given of the training. Usually the lectures, followed by practical work, are given in the evening. The examination consists of a three-hours' written paper,

PHARMACY

Educational Information

PHARMACY

two three-hours' practical tests, and a short oral. Original laboratory notebooks must be available for inspection. The syllabus gives the details of the chemical examination of urine, blood and cerebrospinal fluid; milk analysis, gastric analysis, analysis of faeces; principles of basal metabolism with metabolism experiments; renal efficiency tests; blood-sugar curves; acidosis and alkalosis; chemical tests of efficiency of liver and bile passages and pancreatic efficiency. Training takes place at 17 Bloomsbury Square (under Messrs. G. A. Harrison, M.D., and H. E. Archer, M.R.C.S., F.I.C., Ph.C.); and in Edinburgh, Glasgow and Manchester. Candidates must be members of the Pharmaceutical Society.

Diploma in Pharmaceutical Analysis

The D.P.A.Pharm.Soc. is awarded after a course of training in pharmaceutical analysis. Part I extends over one academic year in the case of a day course or two years in case of part-time or evening. Part II includes not less than two years in a pharmaceutical analytical laboratory. The places for training must be approved. The examination takes place in London in July and the fee is £5 5s. Candidates must be members of the Pharmaceutical Society who were registered as pharmaceutical chemists not later than the third year prior to the year of entry. The syllabus includes chemical analysis; physical methods applied to apparatus; examination of drugs and galenicals; disinfectants; infants' foods; water; urine; writing of reports; general knowledge of legal requirements governing the sale of drugs, medicines and poisons. There are special regulations which only apply to persons registered before February 1, 1933, giving concessions in suitable cases for the elimination of routine systematic training: application should be made to the Registrar, Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1.

University Examinations in Pharmacy

LONDON

In order to be admitted to a degree of B.Pharm., London, either as an internal or external student, candidates must (1) matriculate in one of the ways provided by the regulations, (2) pass the Intermediate examination in science, (3) have followed an approved course of study under recognised teachers of the University or in approved institutions. The fee for each examination is £6 6s. Application for copies of the regulations should be made to the Academic Registrar, the Senate House, University of London, W.C.1, or for an external student to the External Registrar.

The Intermediate examination of the University for external and internal students is set in two papers and a "practical" in each subject. Chemistry includes methods which lead to the discovery of the composition of common natural materials; determination of molecular weights, chemical laws and processes. In the practical: Quantitative, gravimetric and volumetric work. Notebooks must be available for inspection by the examiners.

In Physics: The properties of solids, liquids and gases; principles of heat, sound and light, and the properties of magnetism and electricity.

Botany: Characteristics of angiosperms, gymnosperms, and specified natural orders. Pteridophyta, bryophyta, algae and fungi, together with elementary physiology. In the practical will be included dissection and examination of parts of plants.

Zoology: The fundamental facts and laws, including specified types. General organisation of types, biological laws, structural phenomena, reproduction and diagnostic characteristics of lower forms of life. In the practical: Parts of the animals selected will require description, and some dissection is expected.

The B.Pharm. degree Final examination is the same for external as for internal students, covering pharmaceuticals, pharmaceutical chemistry, pharmacognosy, and physiology, and is similar to the syllabus for the Pharmaceutical Chemist qualification, minus forensic pharmacy. The degree cannot be taken until three years after matriculation. The syllabus in the Ph.C. is drawn up by mutual agreement between University of London representatives and the Pharmaceutical Society.

A degree granted by the University does not entitle to registration by the Pharmaceutical Society, but Regulation 29 provides that any registered apprentice or student who has served the period of practical training and produces to the registrar a notification of having passed the Final examination for the degree of bachelor of pharmacy of the University of London, or a corresponding degree of any other University approved by the Pharmaceutical Society's Council, shall be deemed to have passed the Pharmaceutical Chemist Qualifying examination in the subjects set out on the final certificate, and shall be entitled to enter the examination of the Society in forensic pharmacy and, on passing, be entitled to registration.

MANCHESTER

In Manchester, for the B.Sc. degree in Pharmacy candidates must first have satisfied the requirements for entry upon a degree course and attained credit standard in mathematics and in mechanics in the School Certificate examination or its equivalent. They should then attend courses in chemistry, physics, botany and zoology, and present themselves for the Intermediate examination in these subjects at the end of the first year. Candidates who have offered mathematics in place of zoology attend a short three-months' course in zoology in the second year. Candidates before proceeding to the Final examination must present certificates of having attended satisfactorily during the second and third years approved courses in chemistry, botany, pharmacognosy, pharmaceuticals and pharmaceutical chemistry, physiology, and short courses in bacteriology and in methods of biological assay. They must also present satisfactory evidence that they can read scientific literature in German by passing a language test in this subject. They are required to pass the Final examination in the subjects of botany and pharmacognosy, chemistry and pharmaceutical chemistry, physiology, and pharmaceuticals. This degree is accepted by the Pharmaceutical Society in lieu of the Ph.C. Qualifying examination except in the subject of forensic pharmacy. The cost of a degree course varies with the subjects chosen and with the nature of the degree, but the average fees for an ordinary B.Sc. degree course amount to £42 a session. Full particulars may be obtained from the Pharmaceutical Department, University of Manchester.

WALES

The University of Wales confers the degree of Baccalaureus in Pharmacia (B.Pharm.), after the completion of a course of study divided into two parts.

The first part, extending over one year, is pursued at any one of the four constituent colleges of the University. In certain circumstances, it may be pursued at the Welsh College of Pharmacy.

The second part, extending over two years, is pursued at The Welsh National School of Medicine, in association with the Welsh College of Pharmacy. The Welsh College of Pharmacy is a full-time department of the Technical College, Cardiff. Principal: J. C. Jones, B.Sc.

Courses may also be provided which will enable students, otherwise qualified to do so, to enter for examinations for degrees and diplomas of other examining authorities. The next session commences in October. Further particulars may be obtained from The Secretary, The Welsh National School of Medicine, 10 The Parade, Cardiff.

GLASGOW

In Glasgow, candidates must first pass the Preliminary examination. In not less than three academic years they must attend courses of instruction at the University or the Royal Technical College, and must have been "practically engaged in the operations of pharmacy." The regulations may be obtained from Jackson, Wylie & Co., 73 West George Street, Glasgow.

BELFAST

The Queen's University confers the degree of B.Sc. in Pharmaceutics. Students desiring further information should apply to the Secretary of the University.

PHARMACY

Educational Information

PHARMACY

Teaching Institutions

Schools and institutions recognised by the Pharmaceutical Society for the preparation of students for the Preliminary Scientific examination or for the Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations, or for all three, are to be found in the following centres:—

ENGLAND AND WALES

LONDON

The College of the Pharmaceutical Society
University of London

17 Bloomsbury Square, W.C.1.

Dean: H. Berry, B.Sc., A.I.C., Ph.C. The course for the Chemist and Druggist examination begins on October 5; fee for the course, £47 12s. 6d. The two years' course for the B.Pharm. and Pharmaceutical Chemist examination begins on October 5; fee, £47 12s. 6d. for each year. The above fees include subscriptions to the Students' Association and the University of London Union. Students will be given special instruction in methods of sterilisation and in the preparation and testing of biological products. They will have opportunity to see the work of the pharmacological laboratories. A course of instruction for the examination for the Diploma in Bio-Chemical Analysis will be given on two evenings weekly from October to April; fee, £10 10s. Inquiries should be addressed to the Dean.

Chelsea Polytechnic School of Pharmacy

Manresa Road, Chelsea, S.W.3

Principal: F. J. Harlow, M.B.E., Ph.D., B.Sc., A.R.C.S. The School of Pharmacy includes modern and well-equipped laboratories for the teaching of practical pharmacy, pharmacognosy, pharmaceutical chemistry, pharmaceutical research, pharmaceutical bacteriology, and large-scale galenical manufacture. Day courses for the Preliminary Scientific, Chemist and Druggist, Pharmaceutical Chemist, and Bachelor of Pharmacy examinations commence on September 26, the fee for a full-time day course being £8 per term or £21 per session. Matriculated students may attend B.Pharm. courses as internal or external students of the University of London. Students who wish to gain experience of hospital pharmacy are allowed to work in the dispensaries of L.C.C. hospitals. A short course on surgical instruments and dressings will also be held during the session. Prizes are presented annually to the most successful students in each course, and various scholarships are awarded. Full particulars from the Secretary, Chelsea Polytechnic, S.W.3.

Gordon Hall School of Pharmacy for Women

Drayton House, Gordon Street, W.C.1

Courses of training in pharmacy and dispensing. Particulars from the Principals.

London College of Pharmacy

361, Clapham Road, S.W.9

Principal: Irvine G. Rankin, B.Sc., Ph.C., D.B.A. Nine months' full-time courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations. Evening classes for revision: Tuesday, Wednesday and Thursday. Courses of preparatory study by post can be taken by apprentices and juniors at any time before entering College. Large botanical and herb garden. Session commences October 5. Three months' separate revision courses, all subjects, every term. Special classes for students who are required to receive further instruction before re-entering the examinations.

Norwood Technical Institute

Knight's Hill, West Norwood, S.E.27

Principal: L. N. Coombs, B.Sc., A.I.C. Head of Science Classes: J. Dimmick, B.Sc., A.I.C., A.M.I.W.T. Full-time day courses and day and evening part-time courses for Matriculation, Preliminary Scientific, Inter. B.Pharm. and Pre-

Medical examinations. Also classes in organic chemistry suitable for pharmacy students. Session commences September 12. Fee: Full-time course, £5 per term (London students); out-County students should apply to the Principal. Part-time classes, from 7s. 6d.

The South of England College of Pharmacy

186 Clapham Road, S.W.9

Principal: H. Lucas, Ph.C., F.C.S. Nine months' course for the Preliminary Scientific examination, fee £31 10s. Nine months' course for the Chemist and Druggist Qualifying examination, fee £31 10s. Revision courses for both examinations start in October, January, April and July. Fee: £10 10s. a term. The full-time nine months' courses start on October 4.

West-Ham Municipal College

Principal: H. Baker, Ph.D., M.Sc. Day and evening courses for the Preliminary Scientific examination, commencing September 19. Fees: West Ham, East Ham, Middlesex and London students, Day course, £9 9s. per session. Evening course, £1 per session. Other students 100 per cent. extra fee.

Westminster College of Pharmacy

190 Clapham Road, S.W.9

Principal: P. H. Woodnoth, Ph.C. The College has discontinued the day classes for the examinations of the Pharmaceutical Society and now specialises in the provision of preparatory courses of study by means of correspondence classes. These courses are provided for the Preliminary Scientific and Chemist and Druggist Qualifying examinations, and are used prior to attending approved courses of instruction. Full lecture course fee, covering a period of two years from date of commencement, £1 11s. 6d.; individual subjects may be taken at proportionate fees. Arrangements are also made, when required, to test the progress of the student by means of test papers at intervals. Revision students are catered for by the provision of a special series of test papers. A series of twelve papers is provided at a fee of £1 11s. 6d. Experienced tutors are retained for the correction of these papers.

Wimbledon Technical College

Gladstone Road, S.W.19

Classes for Preliminary Scientific examination. Session commences September 26, 1938. Particulars from the Registrar.

Woolwich Polytechnic

Woolwich, S.E.18

Principal: E. Mallett, D.Sc., A.M.Inst.C.E., M.I.E.E., F.Inst.P. Approved by the Pharmaceutical Society for the Preliminary Scientific examination. Particulars from the Secretary. Day course for Preliminary Scientific examination, £20. Part-time day and evening courses for B.Pharm., maximum fees, 30s.

PROVINCES

Aberystwyth University College of Wales

Principal: Ifor L. Evans, M.A. (Cantab.). Courses in chemistry and botany adapted to the requirements of candidates for examinations of the Pharmaceutical Society. Prospectus from the Registrar.

Barnsley Technical College

Principal: D. Paton Grubb, B.Sc. (Edin.), M.Eng. (Sheff.). A.R.S.M. Recognised for the Preliminary Scientific examination. Full-time course, five days a week, one session, fee £15 15s. Part-time course, one whole day per week, £3 3s. Additional evening or day instruction in chemistry, physics or biology.

Barrow-in-Furness Technical College

Evening classes in chemistry, September to April. Fees: 7s. 6d. to 15s. Day and evening courses for apprentices, September to July. Fees: Course, including chemistry, physics and botany, £3 3s. Particulars from the Principal.

PHARMACY

Educational Information

PHARMACY

Birmingham Central Technical College

Principal: D. S. Anderson, Ph.D., B.Sc., M.I.Mech.E., M.I.A.E. Head of Pharmacy and Biology Department: E. G. Bryant, B.Sc., D.Pharm., Ph.C. Lecturers:—Pharmacy: T. L. Bowyer, A.I.C.; W. S. Lean, B.Pharm., Ph.C.; J. Priestman, B.Sc., Ph.D.; C. L. M. Brown, Ph.C.; Biology: E. J. Moore, M.C., M.Sc.; C. A. Cosway, B.Sc.; Mrs. M. Moore, B.Sc.; N. E. Hickin, B.Sc. Full-time courses for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations of the Pharmaceutical Society, and for the Intermediate Pharmacy and Final B.Pharm. examinations of the University of London. Part-time course for Intermediate examination. Medals and prizes awarded in all the subjects of each course. Courses commence on September 26. Full particulars on application to the Principal, Technical College, Suffolk Street, Birmingham, 1.

Birmingham (Handsworth) Technical College

Principal: A. Robson, B.Sc., B.Com., M.I.Mech.E. Special courses for apprentices, also for professional preliminary examinations. Fees, day or evening: 8s. 6d. to 13s. 6d. for courses in chemistry, physics and botany.

Bolton Municipal Technical College

Principal: J. W. Simpkin, M.Sc. Fees: Chemistry courses, 5s. to 15s. per session; pharmacy courses, £2 2s.

Bournemouth Municipal College

Principal: C. E. Walker, M.A., B.Sc. Recognised for Preliminary Scientific examination. Day classes, fee £6 6s. per term; reduced fees for part time. Evening classes.

Bradford Technical College

Principal: H. Richardson, M.Sc. Head of Department of Pharmacy and Lecturer in Pharmaceutical Chemistry: F. N. Appleyard, B.Sc. (London), Ph.C., F.I.C. Lecturers: Pharmacognosy, D. W. Shaw, B.Sc. (Birmingham), Ph.C. Pharmacy, R. C. Kaye, B.Pharm. (London), Ph.C., and J. W. Cooper, Ph.C. Physiology, J. Douglas, M.D., D.P.H. Bacteriology, M. A. C. Buckell, M.B., B.S., D.P.H. Bio-Chemistry, J. M. Naftalin, M.B., Ch.B., D.P.H. Courses for the Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations and for the degree of Bachelor of Pharmacy (University of London) begin on September 20. Post-graduate evening courses in Bio-Chemical Analysis and in Microscopy of Foods and Drugs commence during the first week in October. The College also provides recognised full-time (day) and part-time (evening) courses in Applied Optics.

Brighton Technical College

Head of the School of Pharmacy: H. B. Mackie, Ph.C., B.Pharm. Full-time course for the Preliminary Scientific, the Chemist and Druggist Qualifying, the Pharmaceutical Chemist Qualifying and B.Pharm. examinations. Fee for any day £24 for a session, or £9 per term. Separate laboratories for dispensing pharmaceutical chemistry, galenical pharmacy and pharmacognosy. Applications for admission should be made as early as possible to the Principal.

Bristol Merchant Venturers' Technical College

Principal: Andrew Robertson, D.Sc. Head of Pharmacy Department: D. J. Williams, B.Sc., Ph.C., Barrister-at-Law. Lecturers: General and Forensic Pharmacy, Head of Department. Pharmacy, W. Cooper, Ph.C. Pharmaceutical Chemistry, G. H. Moore, Ph.C., A.I.C. Botany, Miss E. E. M. Beer, B.Sc. Chemistry and Physics, H. J. Willavoy, M.Sc., A.I.C. Zoology and Physiology, H. Gorvett, Ph.D. Courses for the Preliminary Scientific and Chemist and Druggist Qualifying examinations. Fees (including deposit, etc.), £13 10s. 6d. and £27 10s. 6d. respectively.

Cardiff Technical College

Principal: J. C. Jones, B.Sc., A.M.Inst.C.E. Head of Welsh College of Pharmacy: Rees Vernon Lloyd, B.Pharm. (Lond.), Ph.C. Day courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations, commencing in October.

Two years' course for Pharmaceutical Chemist Qualifying examination, and three years' course for B.Pharm. (Wales) degree. Fee for each course (October to July), £20. Part-time course for Diploma in Biochemical Analysis (held at Welsh National School of Medicine): fee, £10 10s. Open scholarships (tenable for three years) are offered by the College Committee.

Darlington Technical College

Principal: J. W. Angles, M.Sc., M.I.Mech.E. Evening pharmacy course. Fees: 20s. Recognised for Preliminary Scientific examination (old regulations).

Derby Technical College

Principal: W. A. Richardson, O.B.E., B.A., D.Sc., B.Sc. (Eng.). Day and evening classes. Fees: Full-time course, £3 3s. per term; part-time day courses (one day per week and evening), £1 1s. per session inclusive. Recognised for Preliminary Scientific examination.

Exeter University College

Day classes for the Preliminary Scientific examination. Fees are printed in the general prospectus.

Halifax Municipal Technical College

Principal: B. R. Heasman, M.Sc. (Lond.), A.I.C. Instruction for Preliminary Scientific examination. Fee for full-time day course under the new regulations, £9 9s.

Huddersfield Technical College

Principal: J. W. Whitaker, B.Sc., Ph.D., F.I.C. Full- and part-time courses for Preliminary Scientific examination and for Inter. B.Pharm. examination. Fee: full time, £12 12s. a session; part time, £3 3s.

Hull Municipal Technical College

Head of Chemistry Department: L. Balmforth, B.Sc., F.I.C. Recognised for the Preliminary Scientific examination. Classes in inorganic, organic and physical chemistry, physics, biology, botany and materia medica. Courses in materia medica and dispensing for students who have already passed the Preliminary Scientific examination and wish to continue their studies before taking their final at the selected college.

Kingston-upon-Thames Technical College

Head of Pharmacy Department: H. P. Starck, M.A. (Cantab.), Hon. Natural Science Tripos, C.T.D. Full-time day, part-time day, and evening classes for the Preliminary Scientific, Inter. B.Pharm. and Society of Apothecaries examinations. Fee for day session, £15; or £5 per term for part-time day session; for evening session, £1 10s. Day students may take additional evening lectures without further fee. Pharmaceutical chemistry is taken on Wednesday afternoons and biology or physics (heat and light) on Thursday afternoons at an additional £1 per session per half-day for evening students. Session commences on September 26.

Lancaster, Storey Institute Technical College

Principal: Clifford Chew, M.Sc., F.I.C. Pure and Applied Chemistry Departments. Day and evening courses recognised by the Pharmaceutical Society.

Leamington Technical School

Recognised for the Preliminary Scientific examination. Chemistry, Mondays; Biology, Wednesdays; Physics, Fridays.

Leeds College of Technology

Principal: J. H. Everett, B.Sc. Day course for the Preliminary Scientific and other examinations. Fee: £18 18s. per session. Part-time day courses from £3 3s. per session. Evening courses from 10s. to 42s. per session, in chemistry (National Certificate), oils and fats, leather, dyeing, gas, chemical engineering, synthetic plastics, and courses for London B.Sc.

PHARMACY

Educational Information

PHARMACY

Leeds University

Courses of study for the Chemist and Druggist Qualifying and the Pharmaceutical Chemist examinations commence on October 4. Fee: £31 10s. per session. Candidates for the Preliminary Scientific examination are admitted to the Science Degree courses in the required subjects.

Leicester College of Technology

Principal: L. W. Kershaw, B.Sc., A.M.Inst.C.E., Head of the Department of Pharmacy; A. R. G. Chamings, B.Pharm., Ph.C. The School of Pharmacy has occupied a new suite of laboratories during the past session. The provisions include (in addition to the normal services) hot water, steam, and vacuum and distilled water laid on. The Chemist and Druggist course includes window display (for which a modern shop window has been provided). Sterilisation and bacteriological courses continue to be conducted in the dispensaries and pathological laboratories respectively of the Leicester Royal Infirmary.

Leicester, The Wyggeston Grammar School

Headmaster: T. Kingdom, M.A. Recognised for Preliminary Scientific examination; three-term session from September to July. Fee, £18 18s. for the session.

Liverpool, City Technical College

Principal: R. R. Butler, M.Sc., F.I.C., F.C.S. Courses for the Preliminary Scientific examination. Part-time courses (three afternoon or evening classes weekly): Fees, £1 to £2. Full-time courses: Fees, £12 12s. per session; £5 per College term. Special fees for single subjects. Full particulars from the Principal.

Liverpool School of Pharmacy

Principal: H. Humphreys Jones, F.I.C., F.C.S., Ph.C. Preparation for the Preliminary Scientific and Qualifying Chemist and Druggist examinations. Revision course for the October examinations commenced August 4. Nine months' course for the Preliminary Scientific examination and nine months' course for the Qualifying examination commencing the first week in October.

Manchester University

Senior Lecturer in Pharmacy: H. Brindle, B.Sc., F.I.C., Ph.C. Courses for the Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations. Three years' course for the B.Sc. Degree in Pharmacy. A part-time course is held on Wednesdays for the Pharmaceutical Society's Diploma in Biochemical Analysis. Particulars from the Registrar or the Senior Lecturer in Pharmacy.

Norwich Technical College

Principal: H. W. Howes, M.A., M.Sc., Ph.D. Recognised for Preliminary Scientific examination. Combined day and evening courses. Also part-time courses in chemistry and pharmaceutical Latin for those who have passed the Preliminary Scientific examination. Session opens September 12. Fees, 10s. to £9 9s. per session.

Nottingham University College

Head of School of Pharmacy: A. O. Bentley, Ph.C. Full-time day course for Chemist and Druggist examination; fee, £31 15s. Two-year course for B.Pharm. and Ph.C. examinations; fees, £31 15s. each session. Five days per week course for one year for Preliminary Scientific examination; fee, £26 10s. Course for Pharmaceutical Society's Diploma in Biochemistry (four half-days per week); fee, £10 10s. for two terms.

Oxford City Technical School

Recognised for the Preliminary Scientific examination. Evening courses in chemistry, physics and botany, extending over four years. Inclusive fee per session, 20s. Special course in organic chemistry, 10s.

Preston, Harris Institute

Affiliated to the Universities of Manchester and Liverpool. Full-time day course for the Preliminary Scientific examination. Session begins in September. Fees: £10 10s. per session for the three subjects or £3 10s. per term. Full-time day course for Inter. B.Sc. in science or engineering. Evening courses in chemistry, physics, biology and mathematics for Inter. and Final B.Sc., etc.

Plymouth and Devonport Technical College

Principal: A. R. Boeree, M.A., B.Sc. (Oxon.), F.I.C. Part-time courses for Preliminary Scientific examination held three afternoons or evenings each week. Fee, £4 per session. Full-day courses for registered students. Fees, £18 15s. to £25.

Portsmouth Municipal College

Principal: Leonard B. Benny, M.A. (Cantab.), B.A. (Lond.). Approved under the regulations of the Pharmaceutical Society. Classes commence on September 19. Fees: Full-time courses, £15 15s. for Portsmouth residents and those in administrative County of Southampton; £21 for others.

Salford Royal Technical College

Principal: John A. Hartley. Recognised for Preliminary Scientific examination. Full-time day courses; fee, £10 10s. per session. Part-time day classes under the old regulations (second year only); fees, £3 3s.

Sheffield Central Commercial College

Principal: G. E. Thomas, M.A. Recognised for Preliminary Scientific examination. Evening classes. The course extends over three years, the fees being: First year, 17s. 6d., second year, 20s., third year, 22s. 6d.

Southampton University College

Courses are available in preparation for the Preliminary Scientific examination. Fee, £15 per session. Residential facilities are also available. Details of courses, etc., from the Technical Officer.

Stockport College for Further Education

Full-time day course for the Preliminary Scientific examination and part-time day revision courses. Principal: G. Wood, M.Sc.

Sunderland Technical College

Principal: E. R. Verity, B.Sc., A.R.C.Sc. Head of Pharmacy Department: Miss H. C. M. Winch, Ph.C., A.I.C. Full-time day courses recognised for Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations and for the Pharmaceutical Society's Diploma in Biochemistry. Recognised by the University of London for B.Pharm. Fee: £20 per session for full-time course.

Swansea Municipal Technical College

Nine months' full-time course and preparatory part-time course for the Preliminary Scientific examination. Fee for full-time course, £15 15s.

Wigan and District Mining and Technical College

Principal: J. F. S. Ross, M.C., B.Sc., Ph.D. One-year course for the Preliminary Scientific examination. Fee: £10 10s. per session.

Wolverhampton and Staffordshire Technical College

Principal: W. E. Fisher, D.Sc. Chemistry, W. Regan, B.Sc. (Head of Department); R. S. Morrell, M.A., Sc.D. (Honorary Research Tutor); M. Schofield, M.A., B.Sc.; L. R. Mernagh, B.Sc.; Materia Medica and Pharmacy, F. W. Hurdman, M.P.S.; Botany and Zoology, E. S. Twyman, B.Sc. Physics, R. G. Sayer, B.Sc., M. Schofield, M.A., B.Sc. Fees, £12 12s. per session of £5 5s. per term. 1938-39 session opens September 26.

PHARMACY

Educational Information

PHARMACY

SCOTLAND

Aberdeen, Robert Gordon's Technical Colleges

Pharmacy: James E. Bowen, B.Sc., Ph.C., A.I.C., D. S. Rattray, Ph.C., E. Thorp, B.Pharm., D. O. Pinkerton, B.Sc. E. C. Barnett, B.Sc. Chemistry: W. Maitland, D.Sc. Physics: J. D. Stewart, M.A. Day courses: Preliminary Scientific, Chemist and Druggist Qualifying, and Pharmaceutical Chemist Qualifying examinations, and Intermediate and Final examinations for the Degree of Bachelor of Pharmacy of the University of London. Fees: Each course, £26. Evening course over four years: fees, 1st stage, £1; 2nd stage, £1 5s.; 3rd stage, £1 10s.; 4th stage, £1 10s.

Dundee Technical College

Head of Pharmacy Department: D. McCall, B.Sc., Ph.D., Ph.C., F.I.L.S. Students prepared for all examinations of the Pharmaceutical Society and for B.Pharm. of London University. Classes begin September 19. Preparatory evening classes in botany and chemistry, on September 12. Fees: Day classes, £26 5s.; evening classes, £1 to £1 10s. per session.

Edinburgh, Heriot-Watt College (incorporating The Royal Public Dispensary School of Pharmacy)

Full-time courses for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations begin on October 11. Under an agreement between the managers of the Royal Public Dispensary and the Governors of the Heriot-Watt College, the School of Pharmacy of the Royal Public Dispensary is incorporated in that of the College. Principal: J. Cameron Smail, O.B.E.

Glasgow Royal Technical College

Classes for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations, for the degree of B.Sc. (Pharm.), and for the Pharmaceutical Society's Diploma in Biochemical Analysis begin on September 20. Degree course, ninety guineas, in four annual instalments of twenty-two and a half guineas; other day courses, twenty-five guineas per annum.

Paisley Technical College

Principal: Lewis F. Richardson, D.Sc. (Lond.), F.R.S.
Recognised for Preliminary Scientific examination. Day and
perhaps evening classes in the requisite subjects.

Prescription Problem

STUDENTS are invited to test their skill in prescription reading on the example given below (an actual prescription). The solu-

My dear Lucie
r X
My dear George
The Carpenter
B D
B D Cks. 1. 10
My dear Mr. C. C. C.

tion will be given in next week's issue. Prizes will be awarded at the discretion of the Editor.

Dispenserships

Official positions as dispensers or " pharmacists " are open to pharmacists as follows:—

LONDON COUNTY COUNCIL (EXCLUDING MENTAL HOSPITALS).—
For full-time officers the annual scales of salary are as follows:—
(a) Pharmacist Scale A, £400-£20-£500; Pharmacist Scale B, £325-£12 10s.-£375; Pharmacist Scale C, £250-£10-£300.
(b) Pharmacist acting as assistant to another pharmacist, £225-£10-£275. The normal hours of duty are forty-one and a half weekly. Full pay for a reasonable period is made at the discretion of the Hospitals and Medical Services Committee or a subcommittee thereof during absence from duty owing to illness. Annual leave: Pharmacists, Scales A, B and C, three weeks, rising to four weeks after twelve years' permanent service, in addition to the six bank holidays or days in lieu thereof; others, two weeks, rising to three weeks after five years' permanent service, in addition to the six bank holidays or days in lieu thereof.

LONDON COUNTY COUNCIL (MENTAL INSTITUTIONS).—The rates of pay for pharmacists in mental institutions controlled by the London County Council are as follows:—Large London County mental hospitals (men and women).—£270 a year, rising by £15 annually to £405. Caterham, Leavesden, St. Ebba's, and Tooting Bec hospitals and Darenth Park (men and women).—£250 a year, rising by £12 ros. annually to £350. The Manor, Epsom, and The Maudsley hospital (women).—£220 a year, rising by £10 annually to £250, thence by £12 ros. annually to £300. Assistant pharmacists (whole-time and part-time) are also employed. Their salaries are under review at the time of publication and inquiries should be addressed to the Chief Officer, Mental Hospitals Department, Shell-Mex House, W.C.2.

NAVY.—The Pharmaceutical Service consists of the following grades:—(a) Head pharmacist; (b) superintending pharmacists; (c) senior pharmacists; (d) pharmacists. The age of pharmacists on entry must not be less than twenty-one nor more than twenty-eight years. Candidates must possess certificates showing that they have passed either of the qualifying examinations of the Pharmaceutical Society of Great Britain or hold the certificate of competency granted by the Pharmaceutical Society of Northern Ireland or that granted by the Pharmaceutical Society of Ireland, and produce testimonials and a full record of training, qualifications and experience. Successful candidates are required to satisfy the Civil Service Commissioners as to their health and character and to pay a fee of £3 before the issue of the certificate of qualification for appointment. They are included in the list of salaried officers and will be entitled to pension. Pharmacists are paid a salary of £190 per annum, on entry, rising by £12 annually to £274. They are also provided with quarters suitable for unmarried men. When such quarters cannot be provided, an allowance will be granted in lieu. When they are resident within the precincts of a naval hospital they will be allowed to buy certain articles of provision and fuel at contract rates. Pharmacists are eligible, subject to the existence of vacancies, and to their being recommended, for promotion to the grades of senior, superintending and head pharmacist. The scale of salary for senior pharmacists is £290—£12—£380, together with quarters or an allowance in lieu. Further particulars are given in the official regulations.

PUBLIC ASSISTANCE INSTITUTIONS.—Appointments of dispensers under the old poor-law service are now made by boroughs or county councils (see above for particulars of appointments made by the London County Council). Under the Poor Law Order of 1930 such dispensers are not included in the list of principal officers. The salaries vary.

PRISON COMMISSION.—Candidates for appointment must be between twenty-four and thirty-five years of age, and must hold the qualification of the Pharmaceutical Society of Great Britain as chemist and druggist or pharmaceutical chemist. The scale of pay begins at £200 per annum, proceeding by annual increments to £325 per annum. For further information apply to the Secretary (Staff Branch), Prison Commission, Home Office, London, S.W.1.

SHIPPING SERVICE.—The descriptive article in *THE CHEMIST AND DRUGGIST* Annual Special Issue of June 27, 1936 (p. 736), should be consulted.

PHARMACY

Educational Information

PHARMACY

2. IRELAND (EIRE)

THE chief enactments governing the practice of pharmacy in the Irish Free State are the Pharmacy Act (Ireland), 1875, the Pharmacy Act (Ireland), 1875, Amendment Act, 1890, and the Sale of Poisons (Ireland) Act, 1870. Particulars of these Acts, so far as the sale of poisons is concerned, and of the Dangerous Drugs Act, 1920, are given in each annual issue of *The Chemist and Druggist Diary*. The Act of 1875 set up a class of qualified persons, pharmaceutical chemists, to keep open shop for retailing, dispensing and compounding poisons and medical prescriptions. The Amending Act of 1890 brought into existence chemists and druggists and registered druggists on a statutory basis, and introduced a qualification for assistants to pharmaceutical chemists enabling them to transact the business of a shop during their employers' temporary absence. The Saorstát Éireann Juries Act, 1927, conferred on registered pharmaceutical chemists actually in business exemption from service on juries. The Irish Pharmacy Acts, 1875 and 1890, differ from the corresponding Acts of Great Britain in that mention is made of the subjects in which candidates for the Licentiate and the Registered Druggist qualification are to be examined—with the addition, in the earlier Act, of "such other subjects as may from time to time be prescribed by any regulations made in pursuance of this Act." The Registrar and Clerk to the Council of the Pharmaceutical Society of Ireland is Mr. James J. Kerr, P.C., M.P.S.I., 67 Lower Mount Street, Dublin.

Preliminary Examination

This examination must be passed prior to the service in pharmacy required by the Regulations for the Licence examination, unless such service has been commenced before January 1, 1907. The Preliminary examination has been suspended for a period of ten years from January 1, 1935. The Matriculation examination of the National University of Ireland will be accepted in lieu of the Preliminary examination provided that:—(1) A registration fee of £4 4s. is paid; (2) the certificate shows that the candidate has passed in Irish, English, Latin and mathematics; (3) such certificate shall be registered with the Society within sixty days of the commencement of the apprenticeship.

Pharmaceutical Licence

The qualifying examination for pharmaceutical chemist in Ireland is that of Licentiate. The conditions to be fulfilled before entering upon the Pharmaceutical licence examinations are:—

(a) After preliminary registration the person must serve four years as an apprentice or assistant with, and in the sole employment of, a pharmaceutical chemist, or an apothecary, or a firm of legally qualified pharmaceutical chemists, or apothecaries *keeping open shop*, and the candidate must spend the business day with his employer. (Provision is made for service with more than one employer, and, for those who have served four years with a chemist and druggist or registered druggist in Eire, two years' further service with a pharmaceutical chemist or an apothecary suffices.)

(b) Attend courses of lectures in theoretical chemistry and in botany and materia medica, and a course of practical chemistry (after the lectures in theory) at one or other of the following approved institutions:—

School of the Pharmaceutical Society of Ireland.
Central Technical Institute, Waterford.
Municipal Technical School, Drogheda.
Municipal Technical Institute, Limerick.
City of Dublin Technical Schools.
Queen's University, Belfast.
University College, Galway.

Royal College of Surgeons in Ireland, Dublin.
School of Physic, Trinity College, Dublin.
Crawford Municipal Technical Institute, Cork.
Central Technical Institute, Clonmel.
Municipal Technical Schools, Dundalk.
City of Galway Technical Institute.
Crawford Municipal School, Cork.
University College, Dublin.
Trinity College, Dublin.

Some of these are approved for all the subjects, others for one or two subjects only.

Candidates entering for the Licence examination for the first time after October 1, 1933, must have attended a course of practical pharmacy of three months' duration in the Society's Schools.

(c) The person must be twenty-one years of age.

(d) Declaration and certificates of the foregoing must be lodged with the Registrar when the candidate applies for entry to the Licence examination.

The examination commences on the Monday following the second Tuesday of January, April, July and October, at 10 a.m., and is held in the Pharmaceutical Society's House, Dublin.

Candidates must give notice of intention to attend, to the Registrar, fourteen clear days before the date of examination, and this must be accompanied by a receipt of having paid the fee (£5 5s.) into the Bank of Ireland to the credit of the Society. The necessary forms should be procured well in advance. The re-examination fee is £5 5s. The examination, which is written, practical and oral, is in the following subjects:—

BOTANY: Recognition of the principal indigenous plants used in medicine, their natural orders, and the characters of their several parts.

MATERIA MEDICA: Recognition of B.P. drugs; their characters, active principles, sources, official preparations and adulterations.

CHEMISTRY: Elementary laws of chemistry and physics, including equations. Recognition of B.P. chemicals, description of the processes by which they are obtained, qualitative analysis (including B.P. tests) and volumetric analysis, and a practical examination in these subjects. (The Council recommends "Text Book of Pharmaceutical Chemistry" (Bentley and Driver).)

PRACTICAL PHARMACY: Translation of Latin prescriptions, detection of dangerous doses, and compounding and dispensing. Processes of making and recognition of

B.P. non-chemical preparations, and an intimate knowledge of the Sale of Poisons (Ireland) Act, 1870; Arsenic Act, 1851; Poisons and Pharmacy Act, 1908; and D.D.A. Regulations.

Candidates passing the examination must pay a fee of £10 10s. for registration.

Assistants to Pharmaceutical Chemists

This examination, instituted as a qualification for assistants left temporarily in charge of the business of a pharmaceutical chemist, is held quarterly on the Monday following the examination for the Pharmaceutical Licence. This permits unsuccessful candidates at the latter examination to enter for the assistants' examination on payment of a fee of £2 2s. New candidates pay, in addition, a registration fee of £1 1s. The re-examination fee is £2 2s. The conditions are similar to those of the Licence examination, but the candidate need not be twenty-one years of age, nor have taken a special course of instruction. The subjects are:—

PRESCRIPTIONS: Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

PRACTICAL DISPENSING: To weigh, measure and compound medicines, write the directions in suitable language, finish and properly direct each package.

MATERIA MEDICA AND QUALITY OF SPECIMENS: To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins and gums in ordinary use; also to esti-

EIRE

Pharmaceutical Qualifications
in brief

LICENTIATE (L.P.S.I.)

1. Recognised Preliminary examination to be passed before apprenticeship.
2. Four years' apprenticeship to be served in a pharmacy.
3. Courses of three months in (a) Theoretical Chemistry, (b) Botany and Materia Medica, (c) Practical Chemistry to be taken in an approved institution.
4. Pharmaceutical Licence examination to be passed after the age of twenty-one.

REGISTERED DRUGGIST (R.D.)

1. Four years to be served as assistant or apprentice.
2. Registered Druggist examination to be passed.

PHARMACEUTICAL ASSISTANT

As for L.P.S.I., but applicant need not be twenty-one, nor have taken courses of instruction.

PHARMACY

Educational Information

PHARMACY

mate the quality of each specimen submitted, and its freedom from adulteration.

PHARMACY: To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures and powders, and give the proportions of the more active ingredients.

The candidates will also be examined in the Sale of Poisons (Ireland) Act; Arsenic Act, 1851; Poisons and Pharmacy Act, 1908; and D.D.A. regulations.

Registered Druggists

The subjects of the examination are prescribed by the Pharmacy Act (Ireland) Amendment Act, 1890, and are as follows:

English orthography and composition.

Arithmetic and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

The examination is open to anyone who has served as an assistant or apprentice for not less than four years to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary, keeping open shop, and is held in Dublin on the second Tuesday of January, April, July and October. Application for admission, accompanied by the necessary declarations of service and a receipt for £4 4s. placed to the credit of the Society in the Bank of Ireland, must be made to the Registrar at least fourteen days before the dates of the examinations. The re-examination fee is £2 2s.

3. NORTHERN IRELAND Preliminary Examination

PHARMACY in Northern Ireland differs from pharmacy in Great Britain and in the Irish Free State in that the registered proprietors of retail businesses will all, eventually, be pharmaceutical chemists, the former class of registered druggists having either become pharmaceutical chemists since 1925 or having been registered under a provision which is not being continued permanently. The Pharmacy and Poisons Act (Northern Ireland), 1925, under which this change is taking place, provided a modified examination for registered druggists who wished to qualify as pharmaceutical chemists; and many have thus secured the higher qualification. The Queen's University of Belfast offers the degree of B.Sc. in Pharmaceutics, the examination for which exempts from examination by the Pharmaceutical Society in pharmacognosy and chemistry, Part II, and from the written examination in pharmacy. Full particulars may be obtained from the Registrar of the University or the Secretary of the Society.

Before a student can become apprenticed he must pass a preliminary examination in English, mathematics, and three other subjects (one of which must be a language from the following list):—Latin, Greek, French, German, Spanish, Italian, Irish, modern history, geography, botany, chemistry, physics or mechanics. The five subjects must have been passed at one, or not more than two, of the following examinations:—(a) The Matriculation examination of the Queen's University of Belfast; (b) any examination accepted by that University as equivalent to Matriculation examination; (c) the Pharmaceutical Preliminary examination of Queen's University, Belfast. Candidates in the first instance must apply to the secretary of the Pharmaceutical Society of Northern Ireland, 73 University Street, Belfast, at least one month before the last day of entry for Matriculation. They will be examined on the papers set for the Queen's University Matriculation examination, and must reach the standard set for the pharmaceutical

Preliminary, which is below Matriculation standard. An application for the Preliminary certificate of apprentice to a pharmaceutical chemist must be accompanied by £3 3s. Having obtained this, the student will register officially as an apprentice at the Ministry of Home Affairs (fee 5s.). A four-years' apprenticeship to a pharmaceutical chemist or four years with a registered druggist and two years with a pharmaceutical chemist then begins.

Pharmaceutical Chemists

Having satisfied the requirements as to apprenticeship and attendance at approved courses of instruction the candidate, under the new Regulations, must pass Part I, the subjects of which are botany, chemistry Part I, physics and business methods (or pass the Intermediate examination of the Queen's University, Belfast):—

BOTANY.—The elements of plant morphology and anatomy, physiology, classification. Practical examination of plants and preparation of sections for the microscope.

CHEMISTRY, PART I.—An elementary knowledge of chemical action, laws, valency; non-metals, metals, carbon, methane, ethylene and acetylene; methods of determining carbon, hydrogen, oxygen and nitrogen in organic compounds. Solve simple problems in weight and volume. *Practical.*—Preparation of inorganic substances; qualitative and quantitative (volumetric) analysis.

PHYSICS.—Elementary knowledge of mass, energy and work, solids, liquids, gases; temperature; propagation of light, magnetism and electricity. *Practical.*—Perform simple experiments on the above.

BUSINESS METHODS.—Book-keeping, including business books required in a pharmacy; double entry; balance sheets; commercial law relating to master and servant, leases, agreements and contracts. A working knowledge of matters likely to arise in pharmaceutical practice relating to licences, insurance, income tax, partnership and company trading, elementary principles of advertising and salesmanship; modern methods of window display; shopcraft, including arrangement of a shop, windows, heat, ventilation, counters, wall and counter cases and general layout.

Having passed Part I at not more than two examinations, the candidate supplies evidence of age, twenty-one,

attendance at approved courses in the subjects of Part II as follows. Alternatively, the candidate may submit to the Board of Examiners evidence that he has passed the examination in all subjects of Final Part I for the B.Sc. in pharmaceutics of the Queen's University, Belfast, and present himself for oral and practical examinations in pharmacy, practical pharmacy, Latin and prescription-reading. A candidate who fails in any of these subjects must present himself in all at another examination.

PHARMACOGNOSY.—Recognition of B.P. drugs, their sources, characters, active principles, varieties, natural orders, knowledge of B.P. tests.

PHARMACY.—Knowledge of operations requiring heat, disintegration of solid substances, filtration, expression, solution, art of dispensing, manufacture of galenicals.

LATIN AND PRESCRIPTION-READING.—Translation of Latin prescriptions; detection of errors; knowledge of posology; percentages.

PRACTICAL PHARMACY.—Perform operations of the B.P. in making galenicals. Compound and dispense medicines.

FORENSIC PHARMACY.—Knowledge of poisons in the fourth Schedule to the Pharmacy and Poisons Act (Northern Ireland), 1925, and conditions relating to keeping, selling and dispensing. Dangerous Drugs Acts and Regulations.

NORTHERN IRELAND

Pharmacy Qualification in Brief

PHARMACEUTICAL CHEMIST

1. Pass recognised Preliminary examination.
2. Serve apprenticeship (a) four years under pharmaceutical chemist or (b) four years under registered druggist and two years under pharmaceutical chemist.
3. Attend approved courses in Part I.
4. Pass Part I (a) Botany, (b) Chemistry, (c) Physics, (d) Business Methods. Fee £4 4s.
5. Attend approved courses in Part II.
6. Pass Pharmaceutical Chemist examination at age of twenty-one (a) Chemistry (2), (b) Pharmacognosy, (c) Pharmacy, (d) Practical Pharmacy, (e) Latin, (f) Prescription-Reading. Fee £8 8s.

PHARMACY

Educational Information

PHARMACY

CHEMISTRY, PART II.—General knowledge of B.P. and common alkyl and aryl compounds, adulterations in B.P. inorganic and organic compounds and methods of determining purity. *Practical:* Identify specified organic compounds; detect adulterants of B.P. substances; volumetric and nitrometric determinations; methods of preparing more important inorganic and specified organic compounds; alkaloidal determinations.

The examinations are held in June and December, examination fees being £4 4s. for Part I and £8 8s. for Part II. For re-examination, half these fees.

Pharmaceutical Society's Schools

67 Lower Mount Street, Dublin

Director: Chemistry School, Professor H. Norminton, M.Sc. Botany and Materia Medica School, Mr. A. F. Collins, B.Sc., M.P.S.I., H. Dip. Pharmacy Class, Miss K. Fogarty, M.P.S.I., on Mondays, Wednesdays and Fridays from 7.30 to 9.30, and the student must attend at least 75 per cent. of the lectures to obtain a certificate. Two sessions commence on October 1 and January 1. Fees: £4 4s. for students of the Society's Schools; £8 8s. for students of other schools. Theoretical and practical chemistry, *Night Class*, October 1 to May 31, Mondays, Wednesdays and Fridays, from 8-10 p.m. Fees: £8 8s. *Day Class*, March 1 to June 30, Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, 3.30 to 5.30 p.m. Fees: £8 8s. Botany and materia medica, two sessions, October 1 to January 31 and February 1 to May 31, Tuesdays and Thursdays, 7.45 to 9.45 p.m. Fees: £3 3s.

Belfast Municipal College of Technology

Head of Chemistry Department: Professor H. Wren, D.Sc.; lecturers in pharmaceutical subjects, C. J. Still, Ph.D., M.Sc., C. W. Young, Ph.C., Miss Hughes, B.A., M.Sc., A.I.C., J. W. Porter, F.I.C., F.R.C.Sc.I., A. J. Thorburn, B.Sc., Ph.C. Under the co-ordination scheme with the Queen's University of Belfast students may also obtain the degree of B.Sc. in Pharmaceutics.

Apothecaries' Assistants

LONDON

Section 17 of the Apothecaries Act, 1815, enacted that an examination should be instituted for the purpose of granting certificates to persons "to act as assistant to an apothecary in compounding and dispensing medicines." The certificate granted only entitles the holder to dispense under supervision. The examination is held four times a year, the conditions are as follows:—

(a) The candidate (male or female) must be at least eighteen years of age. (b) A certificate of general education up to the age of sixteen must be produced. (c) A certificate of instruction in chemistry for not less than 200 hours during nine months, signed by a principal teacher of chemistry at a university, college, technical institute, school of pharmacy, or a secondary school, or by a person possessing a university degree in science, or a fellowship of the Institute of Chemistry. (d) A certificate of instruction in practical pharmacy and materia medica for not less than 200 hours during nine months, signed by an assistant of the Society holding a public appointment, a registered pharmacist, or a registered medical practitioner. (e) The candidate must pass an examination in (1) compounding and dispensing medicines (a practical and oral examination), (2) chemistry, materia medica, pharmacy, and the translation of prescriptions (an oral examination). Fee £6 6s.

Particulars are obtainable from the Registrar, Society of Apothecaries of London, Water Lane, London, E.C.4.

DUBLIN

The Apothecaries' Hall of Ireland has a similar examination for the certificate of assistant to an apothecary. The examination is held monthly, August and September excepted. Fee, £15 15s. Particulars from the Registrar (Dr. T. G. McGrath), or from the Secretary (Mr. J. F. Kennedy), 95 Merrion Square, Dublin.

Books for Students

The following list contains some of the popular text-books for pharmaceutical students:—

BOTANY

- "Pharmaceutical Botany" (C. & D. Office), 5s.
- "Practical Botany for Beginners," Bower and Gwynne-Vaughan (Macmillan), 4s.
- "Text-Book of Botany for Medical and Pharmaceutical Students" and "Practical Botany," James Small (Churchill), 21s. and 10s. 6d. respectively.
- "Intermediate Botany," L. J. Brimble (Macmillan), 8s. 6d.

CHEMISTRY

- "Text-Book of Inorganic Chemistry," Senter (Methuen), 7s. 6d.
- "Inorganic Chemistry," Lowry (Macmillan), 25s.
- "A Student's Manual of Organic Chemistry," Thorpe and Whiteley (Longmans), 9s.
- "Volumetric Analysis," Hampshire (Churchill), 8s. 6d.
- "Sutton's Volumetric Analysis," A. D. Mitchell (Churchill), 35s.
- "Organic Chemistry for Medical, Intermediate Science and Pharmaceutical Students," A. Killen Macbeth (Longmans), 6s. 6d.

FORENSIC PHARMACY

- The Chemist and Druggist Poisons Guide* (C. & D. Office), 4s. 6d.
- "Poisons Law," H. N. Linstead (Pharmaceutical Press), 5s.

PHARMACEUTICS

- "British Pharmacopoeia," 1932 (Constable), 21s.
- "British Pharmaceutical Codex," 1934 (Pharmaceutical Society), 35s.
- "The Science and Practice of Pharmacy," R. R. Bennett and T. T. Cocking (Churchill), 36s. (2 vol.).
- "A Course in Practical Pharmacy," J. W. Cooper and F. N. Appleyard (Pitman), 7s. 6d.
- "Art of Dispensing" (C. & D. Office), 10s. 6d.
- "A Handbook to Pharmacy," W. Kirkby (C. & D. Office), 5s.
- "A Text-Book of Pharmaceutics," A. O. Bentley (Baillière), 15s.

PHARMACEUTICAL LATIN AND PRESCRIPTION-READING

- "Medical and Pharmaceutical Latin for Students of Medicine and Pharmacy," R. R. Bennett (Churchill), 10s. 6d.
- "Latin for Pharmaceutical Students," J. W. Cooper and A. C. McLaren (Pitman), 6s.

PHARMACOGNOSY

- "Text-Book of Pharmacognosy," Greenish (Churchill), 25s.
- "Practical Pharmacognosy," T. E. Wallis (Churchill), 12s. 6d.
- "Materia Medica," Southall, revised by E. W. Mann (Churchill), 12s. 6d.
- "Text-Book of Pharmacognosy," G. E. Trease (Baillière), 21s.
- "Text-Book of Pharmacognosy," J. W. Cooper and T. E. Denston (Pitman), 18s.

PHYSICS

- "Manual of Physics," J. A. Crowther (Oxford University Press), 14s.
- "A Class Book of Physics," R. Gregory and H. E. Hadley (Macmillan), 6s. 6d.
- "Practical Physics for Inter. B.Sc. Students," H. M. Browning and L. Starbuck (Blackie), 3s.

PHYSIOLOGY

- "Manual of Human Physiology," Leonard Hill (Arnold), 6s. 6d.
- "Aids to Physiology," H. Dryerre (Baillière), 3s. 6d.
- "Bainbridge and Menzies' Essentials of Physiology," H. Hartridge (Longmans), 14s.

ZOOLOGY

- "Outlines of Zoology," J. A. Thomson (Oxford University Press), 21s.

PHARMACY

Educational Information

PHARMACY

Scholarships and Prizes

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN offers annually three medals for competition by pharmaceutical chemists who have passed the Pharmaceutical Chemist Qualifying examination, and were members or student-associates of the Society at the time of passing. The (written) examination is in materia medica, botany and chemistry. The first prize is the Pereira silver medal and books; second, the Society's silver medal and books; and third, the Society's bronze medal and books. The Society also has in its gift the following:—

The Jacob Bell Scholarship.—A scholarship of the annual value of about £70, offered annually by the Society. The award also includes a gift of books. The scholarship is tenable for one or two years in respect of various courses of study. Details are obtainable from Mr. Hugh N. Linstead, Secretary and Registrar, 17 Bloomsbury Square, London, W.C.1.

The Burroughs Scholarship has been combined with *The Redwood Scholarship* and *The Ransom Fellowship* for affording pharmaceutical chemists or university graduates in pharmacy opportunities of working in the research laboratories of the Society. Each scholarship is tenable for two years, and each holder of a scholarship receives apparatus and £100 per annum. The annual sequence of the scholarship is as follows: Burroughs; Ransom; Redwood; Ransom. Particulars may be obtained from the Secretary of the Society.

The Devon and Cornwall Exhibition in Pharmacy, of the annual value of about £25, is tenable at the University College of the South-West, Plymouth, and is applied to the payment of tuition fees. Candidates must have been trained during a specified period in Devon or Cornwall.

Herbarium Prizes.—The Council of the Society offers annually to its student-associates a silver medal, a bronze medal and certificates of honour for an herbarium of not more than 150 British plants collected in any part of the British Isles. Further particulars from the Registrar of the Society.

The Charles James Hewlett Memorial Exhibition, of the value of about £15, is awarded annually on the recommendation of the College staff to the student-associate (other than a Bell scholar) who most distinguishes himself during attendance at the first year's course for the Pharmaceutical Chemist qualifying examination or for the B.Pharm. degree.

Leverhulme Scholarships.—A fund endowing three scholarships of the annual value of £60 each was presented to the Society by the late Lord Leverhulme in 1923. The first scholarship carries with it a gold medal and £5 worth of books, and the second a prize of books to the value of £5. Particulars from the Registrar of the Society.

The Manchester Pharmaceutical Association Scholarship is open to student-associates of the Pharmaceutical Society who have served an apprenticeship in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. It has an annual value of £45.

The Petrie Trust Bursary, of the annual value of about £16, is awarded each year to a registered apprentice or student who has completed a three-years' apprenticeship in the city or county of Aberdeen. Further particulars may be obtained from Mr. H. M. Dugan, 57 Braemar Place, Aberdeen.

The Rammell Studentship, of the value of £100, is tenable for a year in the Society's Pharmacological Laboratories by a pharmacist or last-term student.

Nottingham University College Studentships.—Two studentships of the annual value of £30 each are awarded, on the recommendation of the Council, by the governing body of University College, Nottingham. Further particulars in the Society's Calendar.

Until further notice, the Jacob Bell, Manchester and Leverhulme scholarships and the Devon and Cornwall exhibition will be awarded in accordance with regulations of which the following paragraphs are an abridgement.

1. There shall be one examination for all the scholarships, which will be conducted by an examiner or examiners appointed by the Council of the Society, and the awards made by the Council on the recommendations of such examiner or examiners.

2. The examination shall be held on the second Tuesday and Wednesday in June of each year in Aberdeen, Birmingham, Cardiff, Edinburgh, Exeter, Leeds, London, Manchester, Newcastle, and Nottingham, or such other centres as may be selected.

3. At the time of giving notice of their intention to enter for the examination, competitors must have complied with the conditions laid down in the Society's Calendar.

4. No person shall be awarded more than one scholarship, but a person may compete for all the scholarships for which he is eligible

at the same examination. Should he gain marks entitling him to the award of more than one scholarship he will be permitted to select the scholarship he wishes to have awarded to him.

5. On the day on which the examination is held, competitors must be not more than twenty-two years of age.

6. Competitors must give notice to the registrar in London on or before May 15 in the year in which the examination is to take place. The notice must be accompanied by a registrar's certificate of birth, an employer's testimonial, a declaration as to practical training, and in the case of an entrant for a Nottingham studentship evidence of having matriculated at London University or being qualified for exemption. At the same time the competitor must state (a) the examination centre at which he wishes to attend and (b) in the case of the Bell and Manchester scholarships and the Nottingham studentship, the language subject in which he wishes to be examined.

7. The subjects of the examination (which is conducted by means of written papers) are English essay, pharmacy, chemistry, Latin (or French or German), botany, business methods. (Full particulars are printed in the Society's Calendar.)

THE PHARMACEUTICAL SOCIETY OF IRELAND.—The Council awards annually a gold and silver medal to pharmaceutical chemists who have during the year passed the Licence examination on the first attempt and obtained the following standard of marks: For the gold medal, not less than 240 marks out of 300, and 65 in each of the three subjects; for the silver medal, 230 marks out of 300, and 60 in each of the three subjects. Particulars may be obtained from the Registrar.

THE KINNINMONT SCHOLARSHIP.—Instituted in 1894 by the late Alexander Kinninmont, Ph.C., for pharmacy students in Glasgow and the West of Scotland. The scholarship, of the value of £10 10s., tenable at the Royal Technical College, Glasgow, is awarded on the result of a written examination in chemistry, botany and physics, held in Glasgow in May or June of each year.

THE FAIRCHILD SCHOLARSHIP was founded in 1904 by Fairchild Brothers & Foster. The object of the scholarship is to encourage study during apprenticeship. The examination is designed not as a test for completed studies, but to see how far the student has used his time and powers of observation during apprenticeship so as to fit himself or herself to appreciate fully the subsequent course of study. The value is £60, and, in addition, there are prizes of £5 for the best student in England, Scotland, Wales and Ireland, apart from the scholarship. The examination takes place during June, and entries should be made on, or before, June 1. The examination is held in London, Manchester, Edinburgh, Cardiff, Dublin and Belfast, the amount over 5s. railway fare being refunded if application is made to the Secretary. The age limit is not less than nineteen years on July 1, 1939, nor exceeding the twenty-second birthday on January 1, 1940, and all competitors must be registered students or apprentices of pharmacy in their respective countries. The successful student must commence his studies within the year after winning the scholarship. The subjects are: Chemistry and physics, botany, practical pharmacy and prescription-reading, business knowledge. The trustees are Mr. T. Marns, London; Mr. T. M. Ridley, Carlisle; Mr. H. Brindle, Manchester; Mr. William Kirkby, Birmingham. All communications should be addressed to the Secretary to the Trustees, Mr. Herbert Skinner, Ph.C., Albert Chambers, 65 Holborn Viaduct, London, E.C.1.

Fairchild Examination Results, 1938

The 1938 examination for the Fairchild scholarship and prizes was held on June 16 at the following centres:—Belfast (supervisor, Mr. D. L. Kirkpatrick); Edinburgh (Miss Brew); London (Miss Maddock); Manchester (Mr. T. Miller). Sixteen candidates sat, of whom one represented Ireland, four Scotland and eleven England. Questions for the examination were set and assessed by Messrs. Harry Brindle, B.Sc., F.I.C., Ph.C. (chemistry and physics); T. Marns (business knowledge and sale of poisons); T. Ridley, Ph.C. (practical pharmacy and prescription reading); and Prof. J. Small, D.Sc., Ph.C. (botany and pharmacognosy). The following awards were made:—*Fairchild scholarship*, value £60, Mr. Roland Sydney Burr (399 marks out of possible 500); *prize for England*, value £5, Mr. Ferguson Hartley; *prize for Ireland*, value £5, Mr. Victor Douglas Skeeles; *prize for Scotland*, value £5, Miss Alice Elizabeth Robertson.

MEDICINE

Educational Information

MEDICINE

Medicine

ON May 28, 1937, the General Medical Council adopted certain resolutions which are to come into force in the autumn of 1938. These resolutions will not apply, so far as pre-registration requirements are concerned, to students commencing their studies before that date: those entering their names later will find that a higher standard of general education is demanded. The final details of the changes now sanctioned will depend as much on the licensing and teaching authorities as on the Council. Though the number of medical students qualifying during recent years has exceeded the average of a generation ago or less, it does not follow that the profession is becoming overcrowded; it may be pointed out that opportunities in research, in the Army, Navy and Air Force, in Government service, hospital work and general practice have increased with the increasing public consciousness of the value of medical skill.

In this country the General Medical Council is the governing body for the purposes of examination, registration and discipline. The Council issues (price 1s.) a "Memorandum on the Procedure to be Adopted by those who Desire to Enter the Profession of Medicine. . . ." Candidates for the profession are required to possess, at the outset, a general education of the standard needed for matriculation in medicine, arts or science at a British University, together with evidence of having passed an approved pre-registration examination in elementary chemistry and elementary physics and of having commenced medical study. There are two types of medical qualification, the degrees bestowed by the universities and the diplomas given by such bodies as the Royal Colleges of Physicians and Surgeons.

Preliminary Examinations

The education committee of the General Medical Council issues a list of examining bodies, the examinations of which in general education fulfil the conditions laid down by the Council as to admission as a medical student. Any preliminary examination must include: (1) English; (2) mathematics; (3) a language other than English; (4) an additional subject or subjects as required by the regulations of the examination selected. A Joint Matriculation Board (Secretary, 315 Oxford Road, Manchester, 13) governs the Matriculation examinations of the Universities of Manchester, Liverpool, Leeds, Birmingham and Sheffield. The College of Preceptors, Bloomsbury Square, London, W.C.1, holds in March and September of every year, in Birmingham, Blackburn, Glasgow, Leeds, Liverpool, London, Manchester and Swansea, a Professional Preliminary examination for certificates recognised by the General Medical Council and other bodies. The examination may also be held at other specified centres if sufficient entries are received. A similar examination is held by the Educational Institute of Scotland, 46 and 47 Moray Place, Edinburgh, 3, in February, May, August and November. The examination centres are Edinburgh, Glasgow, Liverpool, London and Dublin. The subjects which are compulsory and those which are optional differ to some extent in the requirements of the various universities and other qualifying bodies; consequently, the candidate must either matriculate at the university at which he or she intends to study or ascertain that the Preliminary examination certificate held is one that will be accepted.

Registration as Medical Students

The way of entrance to the medical profession is laid down in "Regulations of the General Medical Council in regard to the Registration of Medical and Dental Students" (1s. post free from the Registrar, 44 Hallam Street, London, W.1).

The following is a summary of the necessary procedure:—

- (1) Pass an approved examination in general education.
- (2) Pass an examination conducted or recognised by a licensing body in chemistry, physics and elementary biology.
- (3) Having attained the age of seventeen, enter one's name at a university or at a medical school recognised by one of the licensing bodies.

(4) Obtain registration as a medical student.

(5) Study for a minimum of five years certain prescribed subjects.

(6) Pass intermediate examinations; at the end of the fifth year pass a qualifying examination which will entitle the student to receive from a licensing body a qualification enabling him to obtain registration.

The Registrars to whom, according to the division of the United Kingdom in which the student is training, application must be made for registration are:—

The Registrar of the General Medical Council, 44 Hallam Street, Portland Place, London, W.1.

The Registrar of the Scottish Branch Council, 44 Queen Street, Edinburgh, 2.

The Registrar of the Irish Branch Council, 35 Dawson Street, Dublin.

The Registration Office for the Irish Free State is Room 123, Custom House, Dublin.

A few bodies allow medical studies to be commenced at approved teaching institutions other than medical schools, and this principle is extended to graduates in arts or science at approved universities. No general exemption of this kind is given to registered pharmacists except as regards training in practical pharmacy. The Preliminary examination must have been of the standard given in the regulations, but the colleges and universities consider applications for exemption from any part of the medical examinations when such subjects as chemistry and biology have been taken at recognised institutions. Each examining body issues regulations as to the studies required, and the schools of medicine arrange their courses in conformance with such requirements.

University Degrees

The conditions, framed by the universities of the places named, for the ordinary degrees (M.B., Ch.B., or the equivalent degrees) are given in the following paragraphs.

ABERDEEN.—The curriculum extends over a period of not less than five years and two terms. Bursaries, scholarships and fellowships to the annual value of £1,200 are obtainable. Further information may be obtained from the Secretary to the University.

BELFAST.—Three academic years at least, out of the five prescribed for the curriculum, must be passed in the University. The Dean of the Faculty of Medicine is Professor W. J. Wilson, M.D.

BIRMINGHAM.—The course extends over six years, and there are five examinations. Valuable entrance and other scholarships are available. A minimum of three years must be spent in the University. Dean of the Medical Faculty, Dr. Stanley Barnes, Medical School Buildings, Hospitals Centre, Birmingham, 15.

BRISTOL.—There are three examinations. The curriculum occupies five years subsequent to the passing of the Preliminary Science examination in chemistry, physics and biology. Particulars of scholarships and prizes are given in the University (Faculty of Medicine) prospectus. Secretary and Registrar, Winifred Shapland.

CAMBRIDGE.—Students are required to pass or obtain exemption from the Previous examination before proceeding to the examinations for the degrees of M.B., B.Chir. The Registrar is Mr. E. Harrison, M.A.

DUBLIN.—Candidates for the degrees in medicine, surgery and obstetric science must be of B.A. standing and must have completed five years in medical studies. Dean of the Faculty of Physics, Dr. J. W. Bigger.

DURHAM.—There are four examinations for the M.B., B.S. degrees, and the course of study extends over five years, three of which must be spent at the University's Medical School. Numerous bursaries and prizes are offered. Application should be made to the Dean of Medicine, The Medical School, King's College, Queen Victoria Road, Newcastle-upon-Tyne.

EDINBURGH.—The course for the degrees of M.B. and Ch.B., which are not conferred separately, extends over not less than five years. There are four examinations. Several scholarships, bursaries and prizes are offered for competition. Dean of the Faculty of Medicine, Professor Sydney Smith, M.D.

MEDICINE

Educational Information

MEDICINE

GLASGOW.—There are four examinations. The period of study prescribed is five years. Various bursaries and prizes are open to competition. The Dean is Professor J. Shaw Dormer, M.D.

IRELAND (EIRE).—The National University of Ireland confers the M.B., B.Ch., and B.A.O. degrees (simultaneously) upon matriculated students who have passed the Pre-Registration examination and four other examinations. Particulars may be obtained from the Registrar, National University, Dublin.

LEEDS.—There are three examinations, and the course of study extends over five years. Dean of the Faculty of Medicine, Mr. H. Collinson, C.M.G., D.S.O., M.B., M.S.

LIVERPOOL.—The curriculum extends over six years, three of which must be passed in the University. There are three examinations. Fellowships, scholarships and prizes are available. Dean of the Faculty, Professor W. H. Wood, M.D.

LONDON.—The normal course of study extends over five and a half years, and there are three examinations. Several studentships and research grants are available. Internal and external students should apply to the Academic Registrar, Senate House, University of London, W.C.1.

MANCHESTER.—Four examinations for the two degrees, after study extending over not less than five years, must be passed. Scholarships, exhibitions and other competitive prizes are offered to students. Full information is obtainable from the Dean of the Medical School (as to classes) and the Registrar (as to examinations).

OXFORD.—Candidates must hold an Oxford Arts Degree as a prerequisite. Two examinations are held (after a preliminary examination) for the degree of B.M.; the degree of B.Ch. is granted with that of B.M. after passing the second examination. The minimum time in which the degrees can be obtained is about six years from the commencement of "residence." The statutes are published at the Clarendon Press.

ST. ANDREWS.—The course for the M.B., Ch.B. degrees (which are not separable) extends over at least five years, and there are four examinations. Dean of the Faculty, Professor F. J. Charteris, M.D., Medical School, Dundee.

SHEFFIELD.—There are four examinations for the M.B., Ch.B. degrees, the curriculum occupying five and a half academic years. Several scholarships are available. Dean of the Faculty, Professor G. A. Clark, M.D.

WALES.—The course of study is divided into two parts, each extending over three academic years. A degree in science or arts of some approved university is necessary before medical degrees can be conferred. The constituent colleges are Aberystwyth, Bangor, Cardiff and Swansea. Provost, A. W. Sheen; Secretary, S. C. Edwards, The Parade, Cardiff.

Medical and Surgical Diplomas

M.R.C.S.ENG. AND L.R.C.P.LOND.

The Examining Board of the Royal College of Physicians of London and the Royal College of Surgeons of England (known as "the Conjoint Board") grant a joint diploma for registration as a general medical practitioner. There are two professional examinations (in addition to the Preliminary examination and Pre-medical examination) during the five years' curriculum subsequent to registration as a medical student.

The subjects of the *First Professional Examination* are:—Section I, (a) Anatomy, including histology and embryology; (b) Physiology, including biochemistry. Section II, Pharmacology and materia medica. Candidates must take parts (a) and (b) of Section I together until they have passed in one or both parts. Candidates will not be allowed to pass in one part unless they obtain at the same time at least half the number of marks required to pass in the other part. Section II may be passed at any time before the candidate enters for the Final examination. Before admission to the First examination, candidates must produce evidence of having attended specified courses of instruction.

The subjects of the *Final Professional Examination* are:—Section I, Pathology (including morbid anatomy, morbid histology and clinical pathology) and bacteriology. Section II, Part I, Medicine, including medical anatomy, forensic medicine and public health. Part II, Surgery, including surgical anatomy and the use of surgical appliances. Part III, Midwifery and gynaecology. Candidates will be required to produce evidence of having completed specified courses of study.

Synopses of the examination can be obtained from Mr. H. H. Rew, Secretary of the Examining Board, 8-11 Queen Square, London, W.C.1.

SCOTTISH TRIPLE QUALIFICATION

The Royal Colleges of Physicians and Surgeons of Edinburgh, with the Royal Faculty of Physicians and Surgeons of Glasgow, grant three diplomas ("Triple Qual.") jointly entitling the holder to registration as a general medical practitioner. The four examinations are held in Edinburgh and Glasgow. The course of study must occupy not less than five years. Full particulars may be obtained from the Registrar, 18 Nicolson Street, Edinburgh, or the Registrar, 242 St. Vincent Street, Glasgow.

IRISH QUALIFICATION

Particulars of the examination of the Irish Conjoint Board for the licences in medicine, surgery and midwifery may be obtained on application to the Secretary of the Committee of Management, Royal College of Surgeons, St. Stephen's Green, Dublin.

LONDON SOCIETY OF APOTHECARIES' DIPLOMA

The Society of Apothecaries of London grants a diploma (L.M.S.S.A.) in medicine, surgery and midwifery. The Final examination is held monthly, except in September, and comprises:—(a) Principles and practice of surgery, including surgical pathology, surgical anatomy, operative manipulation, instruments and appliances. (b) Principles and practice of medicine, including therapeutics, pharmacology, pathology, bacteriology and morbid histology; forensic medicine, hygiene, mental diseases, and the theory and practice of vaccination. (c) Midwifery, gynaecology, diseases of new-born children and the use of obstetric instruments. Sections (a), (b) and (c) may be taken separately. The minimum period of medical study extends over five years (fifty-seven months). The fee for the Pre-medical examination is £5 5s., and for the Licence £26 5s., which may be paid in three instalments. Members of the Pharmaceutical Society of Great Britain are required to pass a Preliminary examination in general education in accordance with the registration requirements of the General Medical Council. They are exempted from the subjects of chemistry and physics in the Pre-medical examination, and are required to complete the full curriculum and examinations. Application may be made to the Registrar, Society of Apothecaries of London, Water Lane, E.C.4.

DUBLIN APOTHECARIES' DIPLOMA

The Apothecaries' Hall of Ireland grants a diploma (L.A.H.) to candidates who pass the requisite examinations. There are three examinations, with fees of £10 10s., £10 10s. and £21 respectively. Particulars may be obtained from the Registrar of the Apothecaries' Hall (Dr. T. G. McGrath), or from the Secretary (Mr. Jos. F. Kennedy).

Medical Schools

The following are the principal medical schools in the United Kingdom:—

LONDON

The following medical schools are constituents of London University:

Charing Cross Hospital Medical School, Chandos Street, W.C.2. The School contains a large and well-equipped library and a pathological museum. Scholarships and prizes to the value of about £700 are awarded every year. Dean, Mr. Eric A. Crook, M.Ch., F.R.C.S.

Guy's Hospital Medical School, London Bridge, S.E.1.—Several scholarships are obtainable by students, and a residential college (facing the hospital) is open. Communications should be addressed to the Dean of the Medical School, Mr. T. J. Evans, M.A.

King's College, Faculty of Medical Science, Strand, W.C.2.—Students are prepared for all the usual pre-medical and intermediate examinations in medicine and surgery. Scholarships and prizes exceeding £600 in value are awarded annually. Inquiries should be addressed to the Dean of the Faculty of Medicine.

MEDICINE

Educational Information

DENTISTRY

King's College Hospital Medical School, Denmark Hill, S.E.5.—Scholarships to a total value of £1,530 are offered annually. Secretary, Mr. S. C. Ranner, M.A.

London Hospital Medical School, Turner Street, E.1.—Scholarships open to competition, and numerous prizes in various subjects. Dean, Dr. A. E. Clark-Kennedy, M.D., F.R.C.P.

London (Royal Free Hospital) School of Medicine for Women, Hunter Street, W.C.1.—Dean, Miss Elizabeth Bolton, C.B.E., M.D., B.S. A list of scholarships (total annual value, £1,950) and other particulars may be obtained from the Warden and Secretary.

Middlesex Hospital, Mortimer Street, W.1.—The School, which includes the Bland-Sutton Institute of Pathology, the Courtauld Institute of Biochemistry, the Ferens Institute of Otolaryngology and the Barnato-Joel Research Laboratories, is fully equipped for teaching the entire medical curriculum. Two entrance scholarships, value £100 each, and four university scholarships, value £100 each, are awarded annually. Other scholarships and prizes to the total value of £1,000 are also awarded each year. Dean, Dr. H. E. Boldero, F.R.C.P., Secretary, Mr. R. A. Foley, F.C.C.S.

St. Bartholomew's Hospital Medical College, Smithfield, E.C.1.—The total value of the scholarships and prizes awarded annually is over £1,900. Dean, Sir Girling Ball, F.R.C.S.

St. George's Hospital, Hyde Park Corner, S.W.1.—Courses in preliminary and intermediate subjects are taken at King's College. There are several scholarships, exhibitions and prizes. Dean, Mr. M. F. Nicholls, M.Ch.

St. Mary's Hospital Medical School, Cambridge Place, W.2.—Entrance-scholarships, together with several studentships and prizes, are awarded annually. Dean, Sir Charles Wilson, M.C.

St. Thomas's Hospital Medical School, Albert Embankment, S.E.1.—Entrance scholarships and other prizes are open for competition. Secretary, Dr. R. J. C. Thompson.

University College Hospital Medical School, University Street, W.C.1.—Several scholarships and exhibitions are offered by competition. Dean, Mr. Gwynne Williams, M.S., F.R.C.S.

Westminster Hospital Medical School, 17 Horseferry Road, S.W.1.—Scholarships and prizes are awarded. Preliminary and intermediate studies are taken at King's College. Dean, Dr. Adolphe Abrahams, O.B.E.

OUTSIDE LONDON

ABERDEEN.—University Faculty of Medicine.—The total cost of obtaining the M.B., Ch.B. degrees is estimated at £250, including hospital fees, class fees, and degree fees. Clinical study is available at the Royal Infirmary and other local institutions. Applicants should communicate with the Secretary.

BELFAST.—Queen's University of Belfast.—Students are prepared, during a five and a half years' course, for the degrees of M.B., B.Ch., and B.A.O. The combined class and laboratory fee for four years is £105, payable in four instalments. This sum does not include hospital fees, which amount to about £130.

BIRMINGHAM.—University Faculty of Medicine.—The minimum cost of obtaining the double degree is estimated at £246. Combined courses for medical and dental degrees or diplomas can be arranged. Full information is obtainable at the Dean's Office, Medical School Building, Hospitals Centre, Birmingham, 15.

BRISTOL.—University Faculty of Medicine.—The approximate cost of obtaining the conjoint degrees is £279, payable by six annual instalments.

CARDIFF.—The Welsh National School of Medicine is a constituent school of the University of Wales. Composition fees for six years amount to about £300. Application for particulars may be made by letter to the Provost or Secretary.

CORK.—University College is a constituent college of the National University of Ireland. The calendar (price 6d.) is obtainable from the Registrar.

DUBLIN.—Royal College of Surgeons' Schools of Surgery are attached to the Royal College of Surgeons. The cost of obtaining the conjoint diplomas is estimated at £185 18s. Scholarships and prizes are obtainable. A syllabus may be obtained from the Registrar, Royal College of Surgeons.

School of Physic, Trinity College.—The cost of qualifying after obtaining the B.A. degree amounts to £151. Registrar, Mr. G. L. Allen, M.A.

University College.—A constituent college of the National University of Ireland.

EDINBURGH.—University Faculty of Medicine.—The minimum cost of qualification is estimated at £268.

School of Medicine of the Royal Colleges.—The courses of study are suited to University and other qualifications. The minimum cost of education for the triple qualification, including examination fees, is about £180, payable by instalments. Scholarships and bursaries are available. Calendar, rs. post free, on application to the Dean, Surgeons' Hall, Edinburgh.

GALWAY.—University College.—A constituent college of the National University of Ireland.

GLASGOW.—The University Faculty of Medicine.—The division of studies is similar to that adopted at Edinburgh, and the fees are about equal.

The Anderson College of Medicine, Dumbarton Road, W.—Instruction is given in the various subjects of the curriculum. Clinical work is carried on at the Western and Royal Infirmaries.

St. Mungo's College, 86 Castle Street.—The total fees payable for preparation for a Scottish or English qualification amount to rather more than £100.

LEEDS.—University Faculty of Medicine.—The total cost of education for the M.B., Ch.B. degrees is estimated at £367. Registrar of the University, A. E. Wheeler, M.A.

LIVERPOOL.—University Faculty of Medicine.—The composition and other fees for a six-years' course are estimated at £382.

MANCHESTER.—University Faculty of Medicine.—The fees for the training and examination for the M.B., Ch.B. degrees are estimated at £360. Courses are also available for other degrees and diplomas. Particulars may be obtained (price 3d.) on application from the Registrar.

NEWCASTLE-UPON-TYNE.—The Medical School, King's College.—The fees for students registering under regulations coming into force on November 1, 1938, for systematic, practical and clinical instruction for M.B., B.S. will be £230, including £35 for the first (Pre-Medical) examination. The fees may be paid by annual instalments varying from £35 to £40.

ST. ANDREWS.—University Faculty of Medicine.—The inclusive fee for five-years' University and clinical courses for the M.B., Ch.B. degrees is £126, payable in five annual instalments. Advisers of Studies, Professor F. J. Charteris, M.D., Dundee, and Professor D. Waterston, M.D., St. Andrews.

SHEFFIELD.—University Faculty of Medicine.—A five and a half years' course is provided for. The composition-fee is £42 for first, second, third, fourth or fifth years; £28 for sixth year.

SWANSEA.—University College.—A constituent college of the University of Wales. Registrar, Mr. Edwin Drew.

Dentistry

THE number of dentists on the Register for the current year is by no means excessive, and may even be regarded as hardly adequate, for the needs of the population. There are many openings for qualified men, including posts in the Army and Navy. The Dental Board of the United Kingdom, which is the body entrusted with the duty of carrying out the requirements of the General Medical Council with regard to dentists, gives substantial grants to dental students in approved cases. The curriculum, as indicated in the following paragraphs, is in many respects similar to that of medical students.

Dental Training

The registration of dental students is subject to the following conditions:—The candidate must (1) be not less than seventeen years of age, (2) have passed a recognised Preliminary examination (see "Preliminary Examination" under "Medicine") and a Pre-medical examination, and (3) have commenced professional study, by pupilage or otherwise.

DENTISTRY

Educational Information

DENTISTRY

Candidates for a diploma in dental surgery should produce certificates of having been engaged during four years in professional study, and of having received two years' instruction in mechanical dentistry. No portion of practical instruction which is taken prior to the date of registration may be reckoned as a portion of the four years of professional study. It is recommended that instruction in dental mechanics be taken at a recognised dental hospital or school. If any part of such instruction is taken by the candidate as a pupil with a registered dentist, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school. Application for registration should be made on the appropriate form to the Registrar of the General Medical Council, 44 Hallam Street, London, W.1. No fee is charged for registration as a student.

The licence of the Royal College of Surgeons of England takes high rank among registerable qualifications.

The *First Examination* consists of (1) dental mechanics and dental metallurgy; (2) general anatomy and physiology; (3) special anatomy and physiology of the teeth and associated parts. The examination is held three times a year. Candidates may present themselves for the three parts of the First Examination together or separately on production of the required certificates of study.

The *Second Examination* consists of medicine, general pathology, and bacteriology. Candidates must be certified as having attended prescribed courses of study at a recognised institution for two terms.

The *Final Examination* comprises (1) general surgery (including surgical pathology); (2) dental surgery and pathology, and practical dental surgery. Candidates must have been engaged in recognised professional study for four years after passing Part I of the Pre-medical examination, and must have attended certain courses of instruction.

Inquiries should be addressed to the Director of Examinations, Examination Hall, Queen Square, London, W.C.1. Similar conditions apply to the qualifications of the following colleges:

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—The course of study must occupy at least four years. The subjects are taken in three examinations. Information may be obtained from Mr. J. Wishart, M.A., Registrar, 46 and 47 Moray Place.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—The general regulations are similar to those obtaining at Edinburgh. Particulars are obtainable from the Secretary of the Faculty, 242 St. Vincent Street, Glasgow, C.2.

ROYAL COLLEGE OF SURGEONS IN IRELAND, St. Stephen's Green, Dublin. There are three examinations. The Registrar will furnish particulars on application.

University Degrees and Diplomas

BELFAST.—Five and a half years' study is compulsory for students for the degree of B.D.S., and four and a half years for candidates for the licence diploma. Regulations and other information may be obtained from the Secretary, Queen's University.

BIRMINGHAM.—The course for the Diploma (L.D.S.) occupies four years, and the course for the B.D.S. degree extends over five years.

BRISTOL.—The professional part of the dental curriculum occupies four calendar years (L.D.S.), or four and a half calendar years (B.D.S.), after passing a Preliminary Science examination in physics, chemistry and biology. Secretary and Registrar, Winifred Shapland.

DUBLIN.—Four and a half years must be spent in study for the degree of bachelor in dental science, and the B.A. degree is prerequisite. The arts and dental courses may be taken separately or concurrently. Details may be obtained from the Registrar of the School of Physics, Trinity College, Dublin.

DURHAM.—The University grants a licence and two degrees in dental surgery. The diploma course occupies four years, and the primary degree course five years. Particulars may be obtained on application to the Dean of Medicine, The Medical School, King's College, Queen Victoria Road, Newcastle-upon-Tyne.

IRELAND.—The course of study for the B.D.S. degree of the National University of Ireland extends over at least four years, and there are four examinations. Constituent colleges, Dublin and Cork.

LEEDS.—There are three examinations, in addition to a prescribed course of study extending over five years for the degree and four years for the diploma. Registrar of the University, Mr. A. E. Wheeler, M.A.

LIVERPOOL.—There are four examinations for the degree of B.D.S. or for the licence in dental surgery (L.D.S.). Dean of the Medical Faculty, Professor W. H. Wood, M.D.

LONDON.—The degree of B.D.S. is conferred after matriculation and three subsequent examinations, the second of which is taken in two parts. The curriculum extends over five years. For particulars apply to the Academic Registrar, the Senate House, University of London, W.C.1.

MANCHESTER.—The curriculum for the B.D.S. (four examinations) extends over five and a half years. The diploma course covers four years. Inquiries regarding examinations should be addressed to the Registrar of the University.

ST. ANDREWS.—The University grants a diploma and a B.D.S. degree in dental surgery, after four and five years' study respectively. There are four examinations for the diploma and a fifth for the degree. There is also obtainable a diploma in public dentistry, the first of its kind, and a degree of M.D.S. For particulars apply to Professor H. Gordon Campbell, Dental Hospital, Park Place, Dundee.

SHEFFIELD.—Not less than five and a half years' study is required for the degree and four years for the diploma. There are three examinations for each. Registrar of the University, Mr. W. M. Gibbons, O.B.E., M.A.

Dental Instruction

The following are the chief schools in the United Kingdom for instruction in the science and practice of dentistry:—

LONDON

Guy's Hospital Dental School, London Bridge, S.E.1.—Practical training is provided in the hospital. Particulars may be obtained from the Dean of the Dental School, Guy's Hospital, London, S.E.1.

King's College Hospital Dental School, Denmark Hill, S.E.5.—Complete instruction is given, in association with King's College, for dental degrees and diplomas. Dean, Mr. John B. Hunter, M.Ch., F.R.C.S.; Secretary of the School, Mr. S. C. Ranner, M.A.

London Hospital Dental School, Turner Street, E.1.—Full course (including dental mechanics) for L.D.S. diploma. Inquiries should be addressed to the Dean, Dr. N. E. Clark Kennedy, M.D., F.R.C.P.

Royal Dental Hospital of London School of Dental Surgery, Leicester Square, W.C.2.—Particulars of several scholarships are given in the calendar of the school. Dean, Mr. H. Stobie.

St. Mary's Hospital, Paddington, W.2.—Dean of the Medical School, Sir Charles Wilson; Secretary, Mr. B. E. Matthews.

University College Hospital Dental School, Great Portland Street, W.1.—Students are prepared for the L.D.S., R.C.S.Eng. and the B.D.S.London. Inquiries should be addressed to the Sub-Dean, Mr. J. L. Dudley Buxton, L.M.S.S.A., L.D.S., R.C.S.Eng.

OUTSIDE LONDON

BELFAST.—*Queen's University Faculty of Medicine.*—The combined class and laboratory fee is £23 12s. 6d. for the first year and £26 5s. for the remaining three and a half years. These fees do not include hospital fees, which amount to about £130. Entrance forms and other information may be obtained by applying to the Secretary.

BIRMINGHAM.—*University School of Dentistry.*—The Birmingham B.D.S. course costs approximately £360, and the diploma course £310. Particulars may be obtained from the Dean of the Medical Faculty or the University Registrar.

BRISTOL.—*University Faculty of Medicine (Dental Surgery).*—The inclusive cost of the curriculum is estimated at £274 in the case of the degree, and £258 for diploma students. Communications should be addressed to the Secretary and Registrar of the University.

DUBLIN.—*School of Dental Science, Trinity College.*—The total cost of obtaining the B.Dent.Sc. degree is given in the

DENTISTRY

Educational Information

SCIENCE

regulations as £336 15s., including arts and dental courses and examination and degree fees. For details apply to the Registrar of the School of Physic.

Royal College of Surgeons' Schools.—The College grants a diploma in dental surgery. Cost of tuition, £211; examination fees, £21. Registrar, Mr. Alfred Miller.

DUNDEE.—*University of St. Andrew's Dental School*, University College Buildings and Dental Hospital. Composition fees amount to about £192. Adviser of Studies, Professor Gordon Campbell.

DURHAM.—(See "Newcastle-upon-Tyne.")

EDINBURGH.—*School of Medicine of the Royal Colleges.*—Communications should be addressed to Dr. John Orr, Dean of the School, Surgeon's Hall, Edinburgh.

Incorporated Edinburgh Dental Hospital and School, 31 Chambers Street.—General hospital attendance and clinical instruction are taken at the Royal Infirmary. Dean of the School, Mr. A. C. W. Hutchinson, D.D.S., M.D.S., L.D.S., F.R.S.E.; Secretary, Mr. G. M. Stuart, W.S., 56 Frederick Street.

GLASGOW.—*Dental Hospital and School*, 211 Renfrew Street, C.3. Estimated cost of curriculum and licence examinations, £232. Information regarding the School may be obtained from the Secretary, Royal Faculty of Physicians and Surgeons, 242 St. Vincent Street, Glasgow, C.2.

Anderson College of Medicine, Dumbarton Road, W.—Instruction is given at the Glasgow Dental Hospital in the various subjects of the curriculum.

LEEDS.—*Dental Department of the University.*—The cost of education (including books and instruments) for the degree of the University is given in the University Calendar as £495 (£366 for the diploma). Warden of the Dental School, Professor T. Talmage Read, F.R.F.P.S., L.R.C.P., L.R.C.S., L.D.S.

LIVERPOOL.—*University School of Dental Surgery.*—Candidates are prepared for the licence (L.D.S. Liverpool), the degree of B.D.S., and the higher degree of M.D.S. School fees for the B.D.S. amount to £280 19s. 1d.; those for the L.D.S. to £226 13s. 2d. Director of Dental Education, Professor H. H. Stones, M.D., M.D.S., L.D.S.

MANCHESTER.—*Dental Department of the University.*—Students are prepared for the B.D.S. of the University, the diploma of the University, or that of the R.C.S.Eng., and other licensing bodies. Candidates entering upon a course for the degree of Bachelor of Dentistry are required to have satisfied the requirements for entry upon a degree course and attained Credit standard in Mathematics and in Mechanics in the School Certificate examination or its equivalent. The Professor of Dental Surgery, Dental Hospital, Oxford Road, Manchester, 13, answers inquiries concerning classes. A prospectus of the Dental Department (price 3d.) may be obtained on application to the Registrar.

Victoria University of Manchester, School of Dental Surgery, Oxford Road.—The total fees payable to the University, the Hospital, and the Infirmary for courses of study, examinations, loan of microscope, etc., and the conferment of the degree or diploma are approximately as follows:—For the B.D.S.Manch., £330; for the L.D.S.Manch. and for the L.D.S., R.C.S.Eng., £287. The total fees for women are in each case £1 11s. 6d. less. The required outfit in each case (tools, instruments and books) costs about £60 in addition. Prospectus on application to The Professor of Dental Surgery, The Dental Hospital, Oxford Road, Manchester, 13.

NEWCASTLE-UPON-TYNE.—*The Medical School (Dental Department)*, King's College, Queen Victoria Road.—Composition fees (including mechanical pupilage) for the degree amount to about £236, for the diploma to about £221. For particulars apply to the Dean of Medicine.

SHEFFIELD.—*Dental Department, University Faculty of Medicine.*—Students are prepared for the degree (composition fees, 1st and 3rd years, £80; 2nd, 4th and 5th years, £30); or the diploma (composition fees, 1st and 2nd years, £80; 3rd and 4th years, £30) of the University. Registrar, Mr. W. M. Gibbons, O.B.E., M.A.

Science

PERSONS who take up research work, or obtain academic posts in the scientific world, usually possess degrees or diplomas in pure science, whereas those who become works chemists in manufacturing and wholesale concerns often hold a pharmaceutical qualification in addition. Students who contemplate the latter type of career would be wise to consider the possibilities of arranging their course of study for both graduations to run concurrently from the beginning. For the pharmacist who wishes to extend his studies into pure science part-time courses can be arranged at many colleges at low cost. Posts connected with commercial or applied science are as a rule more remunerative than those associated with research or teaching. The following are details of scholarships, diplomas and degrees available to the science student.

Science Degrees

The regulations for a degree in science of London University require the student to pass three examinations, viz.: (1) The MATRICULATION, (2) the INTERMEDIATE examination in science, and (3) the FINAL examination. Regulations are published for (a) *internal* students who register as such and follow approved courses of instruction, and (b) *external* students who are examined without complying with a curriculum.

For particulars of MATRICULATION, Special University Entrance examination, apply to the Matriculation secretary, and for particulars of External examinations apply to the External Registrar, the Senate House, University of London, W.C.1. Regulations for Internal students are to be obtained from the Academic Registrar. The statutes of the University require all External students to register.

The INTERMEDIATE examination in science commences on the first Monday in July. An additional Intermediate examination is held in London, in the more usual subjects only, commencing on the fourth Monday of November. A candidate must have passed the Matriculation examination not later than the preceding January or June, respectively, or otherwise have fulfilled the conditions of exemption. Candidates are required to pass in any four subjects selected by themselves out of the following: (1) Pure mathematics; (2) applied mathematics; (3) physics; (4) chemistry; (5) geology; (6) botany; (7) zoology; (8) general principles of biology; (9) general physiology; (10) military studies; (11) geography; (12) psychology. At least one of the four subjects selected must be taken from among the first three. The fee is £6 6s.

The FINAL examination for B.Sc. takes place once a year, commencing on the third Monday prior to the first Monday in July. The B.Sc. degree is obtainable by passing the B.Sc. (general) examination in three subjects, or the B.Sc. (special) examination in one principal and one subsidiary subject. Successful candidates are awarded First-class Honours, Second-class Honours or a Pass Degree. An additional, general examination for external students only is also held in the more ordinary subjects, commencing on the first Monday in November. Candidates must have passed the Intermediate about a year previously, and the Matriculation approximately three years previously. The fees are £7 7s. for the special examination and £6 6s. for the general examination. There are fifteen prescribed subjects to select from. The degrees Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D.) are also open by examination. The D.Sc. degree is awarded for published work.

The English provincial, Irish, Scottish and Welsh universities confer the B.Sc. degree (*cum curriculo*), usually three years after matriculation with examinations at the end of each session.

Diplomas in Chemistry

The Institute of Chemistry of Great Britain and Ireland conducts examinations for the associateship of the Institute (A.I.C.). A certificate of having passed the examination of the Fellowship in Branch E (*see below*) is nowadays practically

SCIENCE

Educational Information

SCIENCE

a necessity to obtain an appointment as a public analyst, and this branch frequently attracts pharmacists to become associates. The Regulations for the admission of students, associates and fellows are obtainable from the Registrar of the Institute, 30 Russell Square, London, W.C.1.

STUDENTSHIP.—At the commencement of their training candidates should register at the Institute (*see above*) as students. They must be British subjects, not less than sixteen years of age, and have passed an approved preliminary examination, and at the time of application be recommended by a teacher of chemistry at a recognised institution, or by a Fellow of the Institute. Annual registration, 10s.

ASSOCIATESHIP.—The Examination for Associateship (A.I.C.) occupies six days and consists of general theoretical chemistry (three papers) and practical chemistry. Fee, £5 5s. It is open to candidates who (i) have completed four years' systematic day course of study in prescribed subjects, including physics, mathematics, etc., to the required standard, at an institution approved by the Council; (ii) in lieu of first year of above have taken two years' full-time study at a secondary school recognised by the Board of Education or had two years' experience in the laboratory of a Fellow of the Institute; (iii) in lieu of fourth year of above have had one year's satisfactory experience under a Fellow or in an approved laboratory or works; (iv) have obtained a degree including chemistry in the final examination, and have taken a further year's training in chemistry at a recognised institution or have had two other years' approved experience under a Fellow of the Institute or in an approved laboratory or works. In addition, applications are considered from candidates over twenty-five who have been at least eight years in practice and from candidates over thirty who have been engaged in the study and practice of chemistry for at least twelve years and attained a responsible position but who do not comply with the above requirements.

The following is a synopsis of the examination for the associateship:—

(a) *General Theoretical Chemistry.*—A thorough acquaintance with the fundamental laws and theories of chemistry, together with the properties and methods of preparation of the elements and their compounds, both inorganic and organic; and with application of chemistry in the arts and industries. Three papers, any of which may contain questions in inorganic, organic and physical chemistry, are set.

(b) *Practical Chemistry.*—Exercises in qualitative and quantitative (both gravimetric and volumetric) analysis, including the analysis of alloys, ores and minerals, and the determination of substances present in minute quantities, as impurities or otherwise, in commercial products. Preparation and purification of well-defined chemical substances. Organic analysis, including the recognition and determination of the elements and of typical groups and radicals; the identification of organic compounds; gas analysis; the determination of physical constants and the use of physical instruments employed by chemists.

Candidates are required to satisfy the examiners as to their ability to translate technical literature from French and German into English, with the aid of dictionaries.

Admission to the associateship without further examination may be granted to candidates who have obtained certain university degrees with first or second class honours in chemistry, or other diplomas recognised by the Council, subject to certain limitations as to courses of instruction and training.

FELLOWSHIP.—Admission to Fellowship of the Institute is by examination and is open to associates of three years' standing and not less than twenty-four years of age. An Associate desirous of being exempted from such examination will be required to produce satisfactory evidence that he has either (i) carried out original research of sufficient merit; or (ii) devised processes or inventions of sufficient merit; or (iii) acquired sufficient knowledge and ability, in the opinion of the Council, through having been engaged in important analytical, industrial, consulting or other work of a general or specialised character.

The Fellowship examination is more specialised, and candidates may enter for various branches. These are: (A) inorganic chemistry; (B) physical chemistry; (C) organic chemistry; (D) biochemistry; (E) the chemistry (including microscopy) of food and drugs and water; (F) agricultural chemistry; (G) industrial chemistry. Fee, £10 10s.

SCHOLARSHIPS.—Scholarships carrying free instruction and maintenance allowance are awarded annually as a result of science examinations held by the Board of Education. The Salters' Institute awards grants in aid to employees (over seventeen years old) in chemical works in or near London who desire to extend their education in chemical industry. Fellowships in research are offered annually. Applications for grants and fellowships should be made early in June to the Director, Salters' Institute of Industrial Chemistry, St. Swithin's Lane, London, E.C.4.

Science Schools

At various educational centres throughout the country courses are available in scientific subjects covering, in general, the requirements for the National Certificates in Chemistry awarded by the Board of Education (see Rules No. 100, price 2d., obtainable at H.M. Stationery Office) and for the examinations of the Institute of Chemistry. For any other examinations, the student must ascertain from the secretary of the institution whether the curriculum covers the requirements.

Battersea Polytechnic, Battersea Park Road, S.W.11.—Degree courses for B.Sc. (University of London) and for A.I.C. The course for full-time day students extends over three years, and for evening students five years. Courses for F.I.C. (branch E.). Evening courses in chemical technology include food and drugs, bacteriology, oils, fats and petroleum technology and photography. Facilities are available for research work.

Birkbeck College (University of London), Breams Buildings, Fetter Lane, E.C.4.—Complete evening courses for University of London science degrees. Composition-fees for Intermediate (First year only), £5 a term, £12 a session. Final science examination (general or special), £5 15s. a term, £13 10s. a session.

Borough Polytechnic, Borough Road, S.E.1.—Courses on food-stuffs, bacteriology, canning, cold storage and refrigeration, oils, colours and varnishes, printing inks, synthetic resins and plastic moulding. Classes in chemistry are also held.

Chelsea Polytechnic, Manresa Road, Chelsea, S.W.3.—Day and evening courses in chemistry and botany leading to the B.Sc., M.Sc. and Ph.D. degrees of London University and the A.I.C. (Institute of Chemistry). Special courses for F.I.C. (Food and Drugs). Classes in applied chemistry, hydrogen ion measurements, dyes and drugs, photomicrography, etc. Research in physical, organic and cellulose chemistry. Fees: day, £21 per session; evening, £1 to £3 per session (three terms).

Imperial College of Science and Technology, South Kensington, S.W.7.—This college includes as integral parts the Royal College of Science, the Royal School of Mines and the City and Guilds (Engineering) College. The pre-graduate courses of study lead up to an associateship and B.Sc. degree in biology, botany, chemistry, geology, mathematics, physics and zoology at the Royal College of Science; in mining, mining geology, metallurgy and oil technology at the Royal School of Mines; and in engineering (aeronautical, civil, electrical and mechanical) at the City and Guilds (Engineering) College. Post-graduate courses and research may be undertaken by qualified candidates in all the subjects stated, and many others which are detailed in the prospectuses. The post-graduate work may lead up to the diploma of membership of the Imperial College and to the M.Sc., Ph.D., or D.Sc. of the University of London. Fellowships, scholarships and prizes are available. Fees (undergraduate students): £60 per session; (part-time students) £63. Any of the college prospectuses will be sent free on application to the Registrar, Imperial College, S.W.7.

King's College, Strand, W.C.2.—Courses are available in the faculty of natural science for students preparing for B.Sc. degree and Institute of Chemistry examinations. Annual fees: Intermediate course, £36 15s.; Final course, £52 10s.

Northern Polytechnic, Holloway, N.7.—The composition-fees for the Intermediate and Final B.Sc. courses are: Day, £20 per session; evening, from 12s. 6d. to 50s. per session. Evening classes in chemistry, botany, zoology, physics and photography cost from 8s. 4d. to 50s. per session.

Queen Mary College (University of London), Mile End Road, E.1.—Courses for intermediate and final degree examinations in science and courses of research for higher degrees. Fees: undergraduate, £30 12s. per session; post-graduate, £25 2s. per session.

Royal Holloway College, Englefield, Surrey.—For women students only, mainly residential. The college is a school of the University of London, and the degree courses include science.

Sir John Cass Technical Institute, Jewry Street, Aldgate, E.C.3.—Day and evening courses in chemistry, physics, mathematics, zoology, botany, metallurgy. Evening courses in bacteriology, brewing, biology, geology and fuel and petroleum technology.

SCIENCE

Educational Information

SCIENCE

Sessional Fees (September to June): evening courses, range from 8s. 6d. to 60s. Day, full time, £20 per session, £7 10s. per term; part time, £2 per session or £1 per term for each morning or afternoon per week.

University College, Gower Street, W.C.1.—Fees for B.Sc. (general or special) course for three sessions amount to £147. Facilities for post-graduate study. Fees: £29 8s. for two sessions, and £22 1s. for one session. Reduced fees in the case of honours graduates who have taken their undergraduate course at the college.

Wandsworth Technical Institute, High Street, Wandsworth, S.W.18.—Day and evening classes in chemistry, physics and botany. Fees: day, according to course; evening, full course, 12s. 6d. (under eighteen); 15s. (eighteen to nineteen); 20s. (nineteen to twenty-one); 30s. (over twenty-one years of age).

West Ham Municipal College, Romford Road, E.15.—Day and evening classes for B.Sc. (London). Fees: day, £9 9s. to £18 18s.; evening, West Ham, East Ham, Middlesex and London students: Inter B.Sc. course, £1 15s. Final B.Sc. course, £2 5s. Other students at double fees.

ABERDEEN.—*Robert Gordon's Technical College* includes a well-equipped chemical department. Day classes, £7 per term. Evening classes, from 7s. 6d. to 20s. per session.

ABERYSTWYTH.—*University College of Wales*.—Three or four year courses for degree in science.

BANGOR.—*University College of North Wales*.—Composition fees for a science student amount to £24 1s. per session, including registration and apparatus fees.

BARNSELY.—*Technical College*.—Day courses for B.Sc. of Sheffield University and in fuel and glass technology.

BARROW-IN-FURNESS.—*Technical College*.—Day and evening classes in chemistry, botany and physics; fees per session, day classes, £3 3s.

BELFAST.—*Queen's University*.—Complete courses in pure science and in applied science and technology.

BIRMINGHAM.—*University*.—Courses in pure science. *Central Technical College*, Suffolk Street.—Part-time day and evening classes in chemistry, botany, and physics: To degree standard. Classes leading to B.Sc. (Special) London and A.I.C. *Aston Technical College*.—Day and evening courses in chemistry and physics; sessional fees: day, 7s. 6d. to £3; evening, 7s. 6d. to £1.

BLACKBURN.—*Municipal Technical College*.—Day and evening classes are available in chemistry, physics, biology and botany. Day course for the Preliminary Scientific Examinations; evening classes in chemistry, physics, theology and botany.

BOLTON.—*Municipal Technical College*.—Evening courses in chemistry; fees, 5s. to 15s. per session.

BOURNEMOUTH.—*Municipal College*.—Courses for B.Sc. London degrees in science and engineering. Evening classes in science and technology.

BRADFORD.—*Technical College*.—Day and evening courses for University of London degree examinations.

BRIGHTON.—*Technical College*.—Day courses for University of London degrees in Arts, Science, Engineering and Pharmacy; also for the A.I.C. qualification. Fee: £24 for the session.

BRISTOL.—*University*.—Degree courses for B.Sc. (fee, £31 10s.), M.Sc., Ph.D. and D.Sc. degrees.

BURNLEY.—Day and evening classes are held at the Municipal College in chemistry, physics and biology; fees, £1 1s. to £2 12s. 6d. per course (part-time); £6 6s. (full-time). (Head of Department: Dr. R. Cuthill, M.Sc., A.I.C.)

BURY.—Evening chemistry courses (extending over three years) cost 5s. to 10s. per session.

CAMBRIDGE.—*University*.—For particulars apply to the Registrar.

CORK.—*University College*.—Courses for B.Sc. degree.

DARLINGTON.—*Technical College*.—Evening courses in chemistry, physics and biology, 20s. Afternoon course in practical and tutorial chemistry, 15s.

DUNDEE.—*University College*.—Day classes in botany, chemistry, physics, physiology, etc. *Technical College*.—Central Institution for eastern counties of Scotland for technical instruction.

EDINBURGH.—*University*.—Degree courses for B.Sc. *Heriot-Watt College*, Chambers Street (affiliated with the University of Edinburgh).—Day courses extending over four years for the B.Sc. degree in technical chemistry, University of Edinburgh, and the B.Sc. degree in Chemistry, University of London; also for the diploma of the College in applied chemistry and the associateship of the Institute of Chemistry. Fees from £20 to £25. Evening classes in applied chemistry are also held from the end of September to March.

EXETER.—*University College*.—Courses for the external degrees of the University of London, and for the A.I.C. and Institute of Physics examinations.

GALWAY.—*University College*.—A constituent college of the National University of Ireland. Courses leading to the B.Sc. degree.

HALIFAX.—*Municipal Technical College*.—Day courses in chemistry, physics and dyeing, £15 per session; evening classes, from 14s. to 20s. per subject.

HUDDERSFIELD.—*Technical College*.—Full-day and evening courses in chemistry, physics, botany, zoology, and technological subjects, including manufacture of dyes. Courses for Institute of Chemistry examinations. Sessional fees: Day, £12 12s. to £21; evening from 10s., according to requirements.

HULL.—*Municipal Technical College*, Park Street.—Day, B.Sc. (Lond.) and A.I.C. courses, £2 2s. to £10 per term; full-time day courses for pharmacists and dispensers, £2 2s. per term for Hull students. Special courses in agriculture, materia medica, oil extraction, paint and varnish manufacture.

LEEDS.—*University*.—Degree courses in science; composition-fee, £42.

LIVERPOOL.—*University*.—Degree courses in science.

LIVERPOOL.—*City Technical College*.—Day and evening courses for B.Sc. and M.Sc. Degrees of London University, and the A.I.C.; special courses for F.I.C.; and post-advanced courses.

MANCHESTER.—*Victoria University*.—Courses for B.Sc. degree in science. These include ordinary, honours and general honours courses. The degrees of M.Sc., Ph.D., and D.Sc. are conferred on graduates for research.

College of Technology also provides specialised instruction in applied chemistry, leading to the Manchester University degrees of B.Sc. Tech., M.Sc. Tech., and Ph.D., and to certificates in the Faculty of Technology. Evening courses are held for the A.I.C. examination.

Tutorial College (Grime's).—University and other courses in various subjects.

NEWCASTLE-UPON-TYNE.—*King's College (University of Durham)*.—Degree course in pure science, fee: £35 per annum. Registration fee, etc., extra.

NORWICH.—*Technical College*.—Full-time degree courses in science and engineering. Part-time courses, day and evening, in science, commerce, engineering, boot and shoe manufacture, printing, domestic science and building trade subjects.

OXFORD.—*University*.—For particulars apply to the Registrar.

PLYMOUTH AND DEVONPORT.—*Technical College*.—Day and evening courses for B.Sc. London, and less advanced classes in scientific subjects. Sessional fees: Day, £18 15s. to £25; part-time day classes or evening classes, £4.

PORTSMOUTH.—*Municipal College*.—Instruction in science and in technological subjects. Fees, £2 2s. to £8 8s. per term for full-time day courses; 7s. 6d. to 35s. per session for evening courses.

PRESTON.—*Harris Institute*.—Full-time day course for Inter B.Sc. Evening classes for A.I.C., B.Sc. and National certificates.

READING.—*University*.—B.Sc. course, £35 per session. Preliminary scientific examination of the Pharmaceutical Society, £28 per session. Evening classes in physics, chemistry and botany.

ROCHDALE.—*Municipal Technical School*.—Evening classes in chemistry and botany.

ST. ANDREWS.—*United College*.—Inclusive fee for courses of B.Sc. degree in pure science, £94 10s.

SALFORD.—*Royal Technical College*.—Three years' full-time day course in chemistry and applied chemistry for which a diploma, endorsed by the Board of Education, is awarded. Day diploma and evening courses are recognised by the Institute of Chemistry.

SHEFFIELD.—*University*.—Degree courses in science. The composition-fee for a three-year course is £105, payable in three annual instalments of £35.

SOUTHAMPTON.—*University College*.—B.Sc. course composition-fee, £32 per session. Evening classes in science subjects, 12s. 6d. to £5 per course.

SWANSEA.—*University College*.—Day courses are held for degrees in science. Composition fees for a full-time degree or diploma course in pure or applied science, £20 per session.

WIGAN.—*Wigan and District Mining and Technical College*. Principal: J. F. S. Ross, M.C., B.Sc., Ph.D.—Full-time day courses in Chemistry and General Science for Honours Degree (B.Sc. London), College Diploma, and A.I.C. Part-time day and evening courses for B.Sc., A.I.C., and National certificate.

Optics

IN Great Britain no qualification is required to practise as an ophthalmic optician, but it is advisable to possess documentary evidence of training and examination. The examinations for an optical qualification should present no difficulties to those who have already negotiated the Qualifying examination of the Pharmaceutical Society. Large sums of money are being spent on optical benefit under National Health Insurance, but almost without exception the optician is required to possess a diploma granted by one of the recognised examin-

OPTICS

Educational Information

OPTICS

ing bodies. In fact it cannot be too strongly urged that an effort should be made to pass one of the examinations of the highest standard, as the knowledge gained will be of great value in dealing with patients. If possible chemists should take the full-time course at one of the schools mentioned below, but many have successfully pursued their studies mainly by correspondence. Matriculation or equivalent standard of preliminary education is required by one examining body. Scholarships are available at the Northampton Polytechnic Institute, London, and to students about to prepare at certain centres for the examinations of the British Optical Association.

Diploma Schemes

THE BRITISH OPTICAL ASSOCIATION, 65 Brook Street, London, W.1, conducts a Preliminary, a Dispensing, a Fellowship, and an Honours examination, the first-named being in general education and the others in optics. No candidate will be accepted for the Fellowship examination who has not previously passed the Preliminary or an examination of matriculation standard. Fellowship candidates, prior to examination, must submit evidence of at least 500 hours' training in mechanical and technical optics, 100 hours' clinical training, and attendance at an approved course in clinical experience specifically arranged with abnormal or pathological subjects at a recognised institution, and prior to certification of twelve months' employment or business training with an approved optical firm or optician. The examination fees are:—Preliminary, £2 12s. 6d.; Dispensing, £2 2s.; Fellowship, £10 10s.; Honours, £5 5s. The Preliminary examination is held annually and the Fellowship and Honours examinations are held twice yearly. The full prospectus, together with a list of the approved institutions, may be obtained from the secretary.

THE NATIONAL ASSOCIATION OF OPTICIANS has instituted a Fellowship Diploma scheme, examinations for which are held three or more times a year, usually at Birmingham, Liverpool and Glasgow or Edinburgh. Candidates must present certificates of approved preliminary education. They must also provide evidence of practical experience in optical work and of attendance at an approved course of study. Pharmacists, subject to certain conditions, are at present exempt from the First examination. The fees are £3 3s. for the First and £5 5s. for the Final. Chemist-opticians on the O.B.A.C. List are invited to apply for membership. The examination syllabus and entrance forms may be obtained from the Secretary, N.A.O., 130 Princes Road, Liverpool, 8.

THE SCOTTISH ASSOCIATION OF OPTICIANS holds its examination at various centres in Scotland. The syllabus is obtainable from the secretary, 1014 Argyle Street, Glasgow.

THE WORSHIPFUL COMPANY OF SPECTACLE MAKERS holds its examinations (a) Fellowship, (b) Honours, in London twice yearly and occasionally in the provinces. The former is divided into four parts: candidates over the age of seventeen years may enter for Part I, but not for Parts II, III and IV until they have attained eighteen years. The diploma cannot be taken up before the age of twenty-one. No candidate is passed in any section of Parts II, III and IV unless he has satisfied the examiners in Part I. The Honours examination is open to those who have passed the Fellowship examination at least twelve months previously, and is a more advanced test for those who are interested in the fundamental principles of their work. The fees are as follows:—Fellowship: Part I £4 4s., Part II £4 4s., Part III £2 12s. 6d., Part IV £1 11s. 6d.; Honours, £5 5s. Full particulars of the examinations may be obtained from the Clerk to the Company, 36 Fumival Street, London, E.C.4.

Optical Instruction

The following are among the principal schools where the necessary instruction in preparation for the examinations may be obtained:—

NORTHAMPTON POLYTECHNIC, St. John Street, London, E.C.1.—The courses provided by the Department of Applied Optics are organised in two divisions, namely (1) for ophthalmic and dispensing opticians and (2) for optical engineers, optical instrument makers, glass workers and spectacle makers. In the ophthalmic section complete theoretical, practical, clinical and

workshop training is provided, by means of day courses and evening courses, in well-equipped laboratories, workshops and clinics. The courses (full- and part-time) cover the requirements for the Fellowship and Honours examinations of the S.M.C. and B.O.A. Scholarships tenable at the two-years' full time day courses are offered by the Worshipful Company of Spectacle Makers, the Aitchison Memorial Fund and the Governing Body of the Polytechnic; the British Optical Association offers scholarships tenable in the day or evening courses. The prospectus and full particulars will be sent on application to the secretary.

THE SCHOOL OF OPTICS, LTD., 2 Guilford Place, London, W.C.1, prepares students for all of the recognised qualifying examinations. It is well fitted up and thorough training is given. The complete full-time course of from six to twelve months' duration, according to the individual requirements of the student (fee £31 10s.), which commences in May and November of each year, covers the entire syllabus of all the recognised examinations. The part-time combined course (fee £14 14s.), which can be commenced at any time, consists of homework by correspondence, supplemented by classes held during the month preceding the examination, and on Wednesday and Thursday afternoon of every week. The School is fully recognised by the British Optical Association for mechanical, technical and clinical training, and clinical experience.

BRITISH OPTICAL INSTITUTE, LTD., Fern Lodge, 20A Grove Road, Brixton, London, S.W.9.—Full-time, part-time and correspondence courses are provided. Full courses cover the entire syllabus of each optical examination. Afternoon classes and clinic, at which both normal and abnormal cases are dealt with, are held all the year round on two days a week in order to enable students to carry out all branches of practical work. Evening classes are held during the three months and daily revision classes during the month preceding each London examination of the B.O.A. and S.M.C. There has also been arranged a correspondence course which is recognised as part of the 600 hours' mechanical and technical training required by the regulations of the British Optical Association. The Institute is a recognised training centre for all sections of the Fellowship examinations in connexion with the regulations of the B.O.A.

REFRACTION HOSPITALS.—The lectures and demonstrations arranged in connexion with the granting of the hospital certificate commence in October. The subjects include physiology, pathology, embryology, methods of examination, use of drugs and hospital routine. Post-graduate students in ophthalmic optics may attend the hospital without taking the examination. The three hospitals have been recognised by the British Optical Association for clinical experience. The London and Glasgow Hospitals now give complete optical training for the S.M.C. and B.O.A. examinations. Full particulars can be obtained from 58-60 Newington Causeway, London, S.E., or 51 St. Paul's Street, Leeds, or 26-28 Richmond Street, Glasgow, C.1.

MR. C. A. SCURR, F.S.M.C., F.B.O.A., chemist and druggist, 50 High Street, Barnet, prepares candidates for the foregoing examinations. The courses, being mainly correspondence, are particularly suitable for those desiring an optical qualification by spare-time study. The practical work is usually performed during a visit to London, when the practical and revision classes are held, just prior to the examination. The fees vary from £6 6s. to £10 10s., according to the examination.

CENTRAL TECHNICAL COLLEGE, Suffolk Street, Birmingham, has three-year part-time courses, which meet the requirements of the British Optical Association and the Spectacle Makers' Company. Head of department of mathematics and physics, H. B. Keene, D.Sc., F.I.P.

CARDIFF TECHNICAL COLLEGE is providing a course of training for students who intend to become ophthalmic or dispensing opticians. The full course extends over two years, covering the ground required for the Honours and Fellowship examinations of the British Optical Association and other examinations of a similar character such as those of the Worshipful Company of Spectacle Makers.

LIVERPOOL CITY TECHNICAL COLLEGE holds courses in applied optics, general optics and physiology of vision, which meet the requirements of the Spectacle Makers' Company.

VETERINARY SURGERY

Educational Information

CHIROPODY

MUNICIPAL COLLEGE OF TECHNOLOGY, Manchester, provides a full-time day course in applied optics extending over a period of two years. Candidates are required to pass an entrance examination (unless they have passed an approved equivalent examination), on which also a British Optical Association scholarship of the value of £40 per annum is awarded. The College also conducts evening classes which cover the examination syllabuses of, and which are recognised by, the British Optical Association at which Robert Sutcliffe scholarships are tenable. In addition, there are advanced special classes for the B.O.A. Honours examination, special workshop classes in optical craftsmanship, and provision for research work.

NORTH STAFFORDSHIRE TECHNICAL COLLEGE, Stoke-on-Trent, is a recognised institution under the British Optical Association's regulations for mechanical, technical and clinical training.

RUTHERFORD TECHNICAL COLLEGE, Newcastle-upon-Tyne, conducts courses of lectures and laboratory work designed to meet the requirements of students preparing for the B.O.A., S.M.C. and similar examinations. The full training extends over three years (three evenings per week) and the fees range from 30s. to 35s.

WEST HAM MUNICIPAL COLLEGE, Romford Road, Stratford, London, E.15, holds classes in pure and applied optics, suitable for ophthalmic, dispensing and instrument opticians, and cover the syllabuses of the optical examinations. The College is recognised by the British Optical Association for mechanical and technical training. Apply for prospectus and other particulars to the Principal.

SWANSEA MUNICIPAL TECHNICAL COLLEGE is providing a part-time course in optics, particulars of which will be sent on application.

THE INSTITUTE OF CHEMISTS-OPTICIANS, 285 Brompton Road, London, S.W.3, conducts a postal and practical course in optics, the fee being £6 6s. The Institute also conducts an examination for which the fee (if the five sections are taken at one time) is £4 4s. The prospectus may be obtained on application from the secretary, Mr. J. J. Laws, at the above address.

THE COLLEGE OF OPTICS, 70 Bothwell Street, Glasgow, conducts full-time, part-time and postal courses. The Principal is Mr. T. S. Baird, F.S.M.C., F.R.M.S.

GLASGOW SCHOOL OF OPTICS, 300 West Princes Street, Glasgow, C.4, provides part-time and postal tuition suitable for the examination of the leading optical examining bodies. Details may be obtained from the Principal, Mr. M. H. Stone.

HERIOT-WATT COLLEGE, Edinburgh, provides a full-time day course in ophthalmic optics extending over two sessions in preparation for the examinations of the Spectacle Makers' Company and the British Optical Association. This course has been recognised by the latter body for mechanical, technical and clinical training.

Veterinary Surgery

ADVANCES in veterinary science have made the calling of a veterinary surgeon very attractive during the past few years, and the increase in the number of students in training has been such that the veterinary schools are now crowded. The work of the practitioner has changed in character during the past decade, for while the horse is less important, other farm animals are more valuable, and pets are receiving more attention. To practise as a veterinary surgeon it is necessary to possess the membership diploma of the Royal College of Veterinary Surgeons (10 Red Lion Square, London, W.C.1). This College is an examining body, so that professional education must be obtained at one of the affiliated veterinary colleges. Examinations are held simultaneously in London, Liverpool, Edinburgh, Glasgow and Dublin in July and December each year. The examination fee payable to the Royal College of Veterinary Surgeons is £6 6s. for each examination. Candidates referred in one subject pay a fee of £4 4s. for each re-examination. A student who desires to become a veterinary

surgeon must attend college for at least five sessions of thirty weeks each, and pass five professional examinations. Prior to admission as a student he must pass an examination in general education entitling him to admission to a university.

Veterinary Colleges

LONDON.—*Royal Veterinary College and Hospital* (founded 1791; incorporated 1875), Great College Street, Camden Town, N.W.1.—Educational fee for five years' course of instruction, £40 per annum, Students' Union fees amounting to £2 2s., and for those taking the B.Sc. degree in veterinary science of the University of London, additional fees totalling £21. The prospectus may be obtained on application to the secretary.

DUBLIN.—*Veterinary College of Ireland*, Shelbourne Road, Ballsbridge.—The College is conducted by the Department of Agriculture. The tuition fees amount to £25 for each session. Principal, Professor J. J. O'Connor, M.R.C.V.S. Particulars may be obtained from the Registrar.

EDINBURGH.—*Royal (Dick) Veterinary College*, Summerhall (founded 1823).—Class fees for complete curriculum amount to approximately £135. There is also a matriculation fee of 10s. 6d. and an athletic fee of 10s. payable by all students at the beginning of each session. Principal, appointment pending.

GLASGOW.—*Glasgow Veterinary College* (established 1862; incorporated 1909), Buccleuch Street, Garnethill.—Full particulars are obtainable from the secretary. Principal, Professor A. W. Whitehouse, M.A., M.R.C.V.S.

LIVERPOOL.—*The University Veterinary School* gives a university training for the M.R.C.V.S. and also for a veterinary degree. For the fees and complete curriculum application should be made to the Director.

A member of the Royal College who has been engaged in the practice of his profession for two years or upwards may present himself for examination for the diploma of Fellowship (F.R.C.V.S.). Veterinary science degrees are granted by several universities, including Edinburgh, Liverpool and London.

Chiropody

MANY chemists find chiropody a remunerative sideline which can be conducted on a relatively small capital. Although there are no statutory qualifications, systematic training can be obtained from the various institutions detailed below.

Under the auspices of the INCORPORATED SOCIETY OF CHIROPODISTS, 21 Cavendish Square, London, W.1, which acts as an examining body, two-year courses are organised at the EDINBURGH SCHOOL OF CHIROPODY, GLASGOW AND WEST OF SCOTLAND COLLEGE OF CHIROPODY, LONDON FOOT HOSPITAL SCHOOL OF CHIROPODY (33 Fitzroy Square, W.1), and MANCHESTER SCHOOL OF CHIROPODY. Students successful in the examinations are eligible for membership of the Society (M.I.S.Ch.).

THE CHELSEA SCHOOL OF CHIROPODY (Chelsea Polytechnic). The school provides day courses of two years' duration for young students and of one year's duration for students over twenty. An evening course of study extends over five terms. Successful students are given a certificate and are entitled to become members of the Chelsea Chiropodists' Association. The Chelsea School is the only one under public authority.

NATIONAL SCHOOL OF CHIROPODY, associated with the Islington Free Foot Hospital, 133 Upper Street, Islington, London, N.1. A six-months' full-time course terminates with a graduating examination which qualifies the graduate to become a member of the National Institute of Chiropody and to use the letters M.N.I.Ch. on payment of the yearly subscription of £2 2s.

NATIONAL SCHOOL OF CHIROPODY, Manchester, is associated with the National School, Islington, to the courses and diplomas of which its own correspond.

SCHOOL OF SURGICAL CHIROPODY, 5 Smae Institute, Leatherhead, offers home courses leading to qualification for school certificate (M.S.S.Ch.).

Trade Report

Where possible scales of prices of chemicals are given for bulk down to small quantities. Prices recorded for crude drugs, essential and fixed oils and coal tar products are for fair sized wholesale quantities. Qualities of chemicals, drugs, essential and fixed oils, etc., vary, and selected brands or grades would be at higher values

28 Essex Street, W.C.2, August 11

THOUGH THE WEEK has again been quiet, with many principals away on holiday, there has been rather more buying in the PHARMACEUTICAL CHEMICALS market. Considerable interest has been shown in EPHEDRINE and good business is reported in IODIDES. There is an impression in some quarters that a further rise in iodine prices is imminent. It is known that under the existing contract allowance is made for a further advance in the price before the agreed maximum is reached, but well-informed dealers are confident that there will be no increase, at any rate, before October, whatever may transpire in the Chilean origin. There is further speculation as to whether English makers will advance prices of bismuth carbonate and sub-nitrate by some 3d. per lb., corresponding with advances by U.S. manufacturers in their home market. It will be recalled that, despite representations by British makers to the bismuth metal monopoly that the metal price should be reduced, an advance was made in April last. No decision has yet been reached, and the factor of competition outside the Convention will no doubt have to be seriously considered, but against this it is clear that the total of Convention makers' sales far exceeds that of price-cutting competitors. The quietness of the CRUDE DRUGS market has been offset by interest in new crops of a number of commodities. Spot prices of SENEGA have weakened owing to small arrivals, but the forward positions are firmer. A curious feature is the decrease in Polish ERGOR prices, which usually follow the fluctuations of Portuguese and Spanish. At present the prices of the latter are hardening. A possibility is that more Polish is being unloaded in London than in normal years owing to importation difficulties in Continental centres. ALOES, CURAÇAO, continues firm, and there are still no offers from the source. The delayed date suggested by shippers of Chinese RHUBARB has been passed, but no notification of any shipments has reached London importers. After the improved dealing in ESSENTIAL OILS recorded last week the dullness this week has been specially noticeable, with turnover at a lower figure than for a long time past. An unaccountable feature is the comparative absence of business in Sicilian LEMON, while sellers remain apparently apathetic. A few small arrivals of ANISE (STAR) have slightly modified the firm spot position, but the change from that reported last week is not substantial. GERANIUM (Bourbon) has again been dull, and an easing tendency is discernible in the shipment quotations. To pronounce with any assurance upon the LAVENDER position would be premature, but there are rumours of a rather heavier crop than was earlier expected. A good harvest of LAVANDIN is also anticipated, though the scarcity of Spanish spike makes any lowering of prices unlikely. CAJUPUT, for shipment, and American PEPPERMINT are firmer. EUCALYPTUS is easier and in better demand.

Exchange Rates on London

THE following is a list of the chief Continental and other exchange rates at the opening on Thursday morning:—

Centre	Quoted	Par	August 4	August 11
Amsterdam ...	Fls. to £	12.107	8.96	8.95½
Berlin ...	Mks. to £	20.43	12.20	12.17
Brussels ...	Belgas to £	nominal	28.95	28.91
Copenhagen ...	Kr. to £	18.159	22.40	22.40
Lisbon ...	Esc. to £	110	110½	10½
Madrid ...	Ptas. to £	25.24½	nominal	nominal
Milan ...	Lire to £	92.46	93	92½
Montreal ...	Dols. to £	4.86½	4.91½	4.90
New York ...	Dols. to £	nominal	4.89½	4.87½
Oslo ...	Kr. to £	18.159	19.90	19.90
Paris ...	Fr. to £	124.21	178½	178½
Prague ...	Kr. to £	164.25	141½	141½
Stockholm ...	Kr. to £	18.150	19.40	19.40
Warsaw ...	Zloty to £	43.38	25½	26
Zurich ...	Frs. to £	25.2115	21.42	21.32½

Bank rate 2 per cent.

Pharmaceutical Chemicals, etc.

ACETANILIDE.—Quoted unchanged: B.P. crystals and powder, 1s. 7d. to 1s. 10½d. per lb., as to quantity.

AMIDOPYRINE.—Dealers' quotations are keen: crystals, two cwt., 9s. 4d.; one cwt., 9s. 8d.; less than one cwt., 10s. per lb., with powder 2½d. per lb. extra.

AMMONIUM ICHTHIOSULPHONATE.—One cwt., 1s. 6½d., in 14-lb. tins; 1s. 8d. in 1-lb. tins; 1s. 10d. in 8-oz. tins, and 2s. 1d. per lb. in 4-oz. tins.

BISMUTH SALTS.—Makers' home trade and export scales of prices for these salts continue steady:—

	Net Monthly Account			Net 14 days	
	Under 4 lb.	4 lb. and under 8 lb.	8 lb. and under 28 lb.	28 lb. and under 1 cwt.	Not less than 1 cwt.*
Carbonate ...	s. d. 8 6	s. d. 8 0	s. d. 7 3	s. d. 6 9	s. d. 6 6
(Home Trade only) ...					
Citrate ...	11 10	11 4	10 7	10 1	9 10
Nitrate Cryst. ...	6 8	6 2	5 5	4 11	4 8
Oxide ...	12 11	12 5	11 8	11 2	10 11
Salicylate ...	10 0	9 6	8 9	8 3	8 0
Subchloride ...	12 8	12 2	11 5	10 11	10 8
Subgallate ...	9 8	9 2	8 5	7 11	7 8
Subnitrate ...	7 10	7 4	6 7	6 1	5 10

* Contracts are booked for 1 cwt. and upwards for delivery over three months and are subject to a rise and fall clause. A rebate of 3d. per lb. is allowed on sales of not less than 2 cwt. (assorted if required) provided delivery is completed within three months. All deliveries ex contract are sold on net cash 14 days' terms.

CITRATES.—Makers' prices for POTASSIUM CITRATE are as follows:—

	1 lb. bts. or tins	2 lb. bts. or tins	4 lb. bts. or tins	7 lb. bts., tins or jars	14 lb. bts., tins or jars	28 lb. tins free
Under 4 lb. ...	s. d. 2 2	s. d. 2 0½	s. d. —	s. d. —	s. d. —	s. d. —
4 lb. and under 7 lb. ...	2 1	1 11½	1 11½	—	—	—
7 lb. " " 14 lb. ...	2 0	1 10½	1 10½	1 9½	—	—
14 lb. " " 28 lb. ...	1 11	1 9½	1 9½	1 8½	1 8½	—
28 lb. " " 1 cwt. ...	1 10	1 8½	1 8½	1 7½	1 7½	1 7
1 cwt. ...	1 8	1 6½	1 6½	1 5½	1 5½	1 5

CITRIC ACID (B.P. CRYSTALS).—Fair demand continues at the previous prices. British material quoted at 1s. 0½d. per lb. less 5 per cent. discount, nominal and without engagement. Dealers' prices for imported material are competitive.

CREAM OF TARTAR.—Business about average; prices steady. British material, 99 to 100 per cent., 92s. per cwt., less 2½ per cent. discount. Dealers' prices for foreign material competitive.

IODIDES.—Makers' prices for the salts continue at the advances recently recorded. POTASSIUM, B.P.—Not less than 1 cwt., 5s. 3d.; not less than 28 lb., 5s. 6d.; not less than 14 lb., 5s. 9d.; not less than 7 lb., 6s. 3d.; not less than 4 lb., 6s. 9d.; smaller quantities, 7s. 3d. per lb. SODIUM, B.P.—Not less than 28 lb., 6s. 6d.; not less than 14 lb., 6s. 10d.; not less than 7 lb., 7s. 4d.; not less than 4 lb., 8s.; smaller quantities, 8s. 10d. per lb. IODINE, B.P., RESUBLIMED.—Not less than 1 cwt., 5s. 9d.; not less than 28 lb., 6s.; not less than 14 lb., 6s. 3d.; not less than 7 lb., 6s. 9d.; not less than 4 lb., 7s. 5d.; smaller quantities, 8s. 2d. per lb. IODOFORM, B.P., CRYST., PRECIP. or POWDER.—Not less than 28 lb., 8s. 3d.; not less than 14 lb., 8s. 7d.; not less than 7 lb., 9s. 3d.; not less than 4 lb., 10s. 1d.; smaller quantities, 10s. 11d. per lb. Contracts for 1 cwt. and upwards (assorted if required) with fall clause, for delivery as required during four months. 28-lb. tins and 1-cwt. cases free. All bottles are charged, but will be credited in full if returned, carriage paid, in good condition within three months. Carriage paid on any quantity. It is a condition of sale that buyers undertake not to resell any quantity of the above products at prices or terms below the scale for any such quantity current at the time the resale is made. The previous alteration in prices was on August 9, 1937.

PARALDEHYDE.—Market is quiet: in carboys, 1s. 2d.; in winchesters, 1s. 5d. to 1s. 6d.; in bottles, 1s. 7½d. to 1s. 10½d. per lb., ex store.

PHENACETIN.—Prices continue steady, and the amount of business passing is not heavy: crystals or powder, bulk quantities, 2s. 6d.; smaller parcels, 2s. 7½d. up to 3s. per lb., as to quantity.

PHENOLPHTHALEIN.—Limited business: two cwt., 2s. 0d.; one cwt., 2s. 10d.; 28 lb., 3s.; 14 lb., 3s. 1d.; 7 lb., 3s. 2d.; smaller quantities, up to 3s. 6d. per lb.

PHENYLETHYLBARBITURIC ACID.—Small parcels, in 2-lb. bottles, are quoted at about 18s. to 19s. 6d. per lb., as to quantity.

SACCHARIN.—Convention price for 550 is 37s. 6d. per lb., duty paid, with rebates for quantities.

SALICYLIC ACID (B.P.).—Steady at the makers' scale of prices: five cwt., 1s. 7d.; one cwt., 1s. 7½d.; 28 lb., 1s. 10d.; 14 lb., 1s. 11½d.; 7 lb., 2s. 0½d.; 4 lb., 2s. 2½d. per lb.

SALOL.—Continues dull, with crystals quoted from 2s. rd. to 2s. 6d. per lb., as to quantity. Powder, 2½d. per lb. extra.

SANTONIN.—Business is reported to be of small account, with bulk quantities at about £10 5s. per kilo. Small quantities up to £11 10s. per kilo, ex store.

SODIUM BENZOATE (B.P.).—Makers' prices are steady: five cwt., 1s. 3½d.; one cwt., 1s. 4d.; smaller parcels, from 1s. 5d. up to 2s. per lb., as to quantity.

SODIUM DIETHYLBARBITURATE.—Controlled prices show no change: spot, one cwt., 11s.; 28 lb., 11s. 3d.; 14 lb., 11s. 6d.; 7 lb., 11s. 9d.; smaller parcels, up to 12s. 3d. per lb.

SULPHONAL.—Quiet spot market, with sellers offering at keen prices: crystals or powder, two cwt., 15s. 5½d.; one cwt., 15s. 10½d.; 56 lb., 16s. 1d.; smaller parcels, up to 16s. 6d. per lb.

TARTARIC ACID (B.P. CRYSTALS).—Average volume of business for the season: British makers quote at 1s. 1½d. per lb., less 5 per cent. discount, dealers offering foreign materials at competitive prices.

VANILLIN.—Steady at the agreed Convention scale: ex clove oil or guaiacol, five cwt., 12s. 5d.; one cwt., 12s. 8d.; 56 lb., 13s.; less than 56 lb., 13s. 2d. per lb.

Crude Drugs, etc.

ACONITE ROOT (NAPELLUS).—Offered at 95s. per cwt., to arrive.

AGAR.—There has been a fair spot demand, with further Continental inquiry; prices remain steady: spot, Kobe, No. 1, 3s. 1½d. to 3s. 3d.; No. 2, 2s. 11d. Yokohama, No. 1, 2s. 10d. per lb.; shipment, Kobe, No. 1, August-September, 2s. 10½d. to 2s. 11d.; No. 2, 2s. 7d. Yokohama, No. 1, 2s. 7½d. per lb., c.i.f. Next season's crop, January-February shipment, Kobe, No. 1, quoted at 2s. 8½d. per lb., c.i.f.

ALOE.—The spot price for Curaçao remains firm, and in the continued absence of concrete offers from the source the c.i.f. price of 150s. per cwt. is nominal. Cape, spot, steady at 60s. to 62s.; shipment, 57s. 6d. per cwt., c.i.f. Curaçao, spot, quoted at 157s. 6d. to 175s. per cwt., as to quality.

ANTIMONY.—Continuing steady and quiet: Chinese, crude, spot, £35, duty paid; shipment, August-September, £30, c.i.f. English regulus, £70 to £71 per ton, ex store.

BALSAMS.—Mainly quiet and steady, with Canada easier both on spot and forward: *Tolu*, 1s. 7½d.; *Canada*, spot 3s., shipment 2s. 10d.; *Copaiba*, 1s. 8d.; *Peru*, 4s. 3d. per lb., ex store, duty paid.

BUCHU.—Practically no business passing. Prices unchanged from: spot, new crop, 1s. 6d. to 1s. 7½d. per lb., as to quality; old crop at slightly below these figures; shipment offers of 1s. 4½d. would probably be accepted.

CAMPHOR.—Steady and unchanged: Japanese monopoly, BB brand, £7 10s. per 100 lb.; this price now officially quoted; Japanese, natural, spot, tablets, 2s. 6½d.; powder, 2s. 3d.; slabs, 2s. 2½d. per lb., ex store; shipment, tablets, 2s. 2d.; powder, 1s. 11½d.; slabs, 1s. 11½d. per lb., c.i.f.; English refined flowers, one cwt., 3s. 1d.; 28 lb., 3s. 2d.; small lots, 3s. 3d. per lb. Transparent tablets, 4 oz., 8 oz. and 16 oz., 3s. 4d.; 1 oz. and 2 oz., 3s. 5d.; ½ oz., ½ oz. and ¼ oz., 3s. 6d. per lb.

CARDAMOMS.—Small amount of inquiry, with little change in prices: spot, Mangalore seed, 3s. 4½d.; Bombay seed, 3s. 3d.; Aleppy seed, 3s. 7d.; Aleppy greens, 2s. 6d. per lb. Shipment, Mangalore seed, 2s. 7d.; Aleppy seed, 2s. 10d.; Aleppy greens, f.a.q., this season's, 1s. 10½d. per lb., c.i.f.

CASCARA SAGRADA.—There are still no offers of this season's peel from the source, but there may be speculative re-sellers at around 44s. A parcel afloat, due end of August, is quoted at 50s., landed and duty paid. Spot prices are firm at: 1936 peel, 58s. 6d.; 1937 peel, 55s. per cwt., ex store.

CHAMOMILES.—First pickings of new crop flowers are obtainable at 120s. per cwt., c.i.f.

CLOVES.—Market not very active, but values are maintained; with Madagascar, shipment, a shade firmer: Zanzibar, spot, 8½d.; shipment, August-September, 8½d. per lb., c.i.f. Madagascar, spot, in bond, 7½d.; shipment, August-September, 7½d. per lb., c.i.f.

The landings of Zanzibar in London during the week ended August 6 were nil, and the deliveries 60, leaving a stock of 1,402. From January 1 to date the landings of Zanzibar have been 1,904, and the deliveries 1,571. Landings of Madagascar for the week ended August 6 were nil, and the deliveries 9, leaving a stock of 1,349. From January 1 to date the landings of Madagascar have been 1,131 and the deliveries 1,858 packages.

COCONUT (DESICCATED).—Quiet, spot values easier: spot, fine, 16s. 9d.; medium, 16s. 9d. per cwt.; shipment, halves, August-September, 15s. 6d.; October-November, 15s. 9d. per cwt., c.i.f. (sellers).

DAMIANA LEAVES.—Quotations for new crop leaves are around 9d. per lb., ex store.

ERGOT.—Portuguese new crop, to arrive, is quoted at 5s. 9d. to 6s., as to seller. A little is available on spot at 6s. Spanish, new crop, reported offered at 7s. per lb., c.i.f. Polish is cheaper at 3s. 6d. per lb. No Russian offering.

GENTIAN.—Supplies on the spot quoted at 33s. 6d. per cwt.

GINGER.—Business quiet, with spot and forward at easier prices: West African, spot, 27s. 6d.; for arrival, 24s. 6d. per cwt., c.i.f.

GUM ACACIA.—Continuing firm and quiet: Kordofan, cleaned sorts, spot, 39s.; shipment, 36s. 6d. per cwt., c.i.f.

HEENNA.—Good green leaves are now available at 35s. per cwt.

HONEY.—Limited business at prices which continue steady: new crop Jamaican, from 29s. for dark manufacturing to 45s. for pale set; Canadian, duty paid, 52s. 6d.; Canadian, 55s. per cwt., ex store.

HYDRASTIS.—Quiet, but steady: spot, 2.3 per cent. hydrastin, 14s. 9d. to 15s.; U.S.P., 14s. 6d. to 14s. 9d.; untested, 14s. to 14s. 3d.; shipment, U.S.P., 14s. 3d. per lb., c.i.f., if available.

INSECT FLOWERS.—Dalmatian quoted at 85s. to 90s. per cwt.; Japanese, 112s. per cwt.

IPCACUANHA.—Fair volume of business, forward prices being now firmer. Some business has been done in Minas at 5s. 9d., but no further supplies are available. Mattó Grosso, B.P., spot, 7s. to 7s. 3d.; shipment, 6s. 6d. to 6s. 10½d. per lb., c.i.f., as to source and quality.

JALAP.—Small inquiry; prices steady: spot, 13.3 per cent., 1s. 1d.; 10.5 per cent., 10d. per lb.

JUNIPER BERRIES.—Inquiry is small and prices have eased: spot, good sifted quality, 22s. 6d. per cwt.

MENTHOL.—Demand is slow, but prices fully steady: K/S brands, 13s. 1½d. to 13s. 3d.; shipment, September, 11s. 4½d., c.i.f. No offers of the October-December position. Chinese, spot, 12s. 9d., with no shipment offers. French manufacture is quoted from 12s. per lb., duty paid, in cases of six 5-lb. tins.

MERCURY.—Prices are unchanged from those previously quoted, but there is a possibility that the spot price may shortly undergo some modification to compensate for the depreciated value of sterling in terms of the dollar: shipment, 60 dollars per bottle, f.o.b., Continent; spot, £13 18s. to £13 18s. 6d. per bottle, ex store, London.

ORANGE PEEL.—Bitter, quarters, quoted on spot at 9d. per lb.

PEPPER.—Values mainly steady, with Aleppy and Tellicherry firmer on spot. White Muntok is fractionally easier: Lampong, in bond, 2½d.; shipment, August-October, 2½d.; October-December, 2½d.; January-March, 2½d., c.i.f. Tellicherry, spot, 4½d.; shipment, August-October, 33s. c.i.f. Aleppy, spot, 4½d.; shipment, August-October, 33s., c.i.f. White Muntok, in bond, 3½d.; shipment, August-October, 3½d.; October-December, 3½d., c.i.f. London Terminal Market: Black, August, 2½d.; October, 2½d.; December, 2½d.; March, 2½d. White, July, 3½d.; October, 3½d.; December, 4d.; March, 4½d. per lb.

PIMENTO.—Quiet and easier: spot, 8½d. per lb.; shipment, August-September, 69s. per cwt., c.i.f.

PSYLLIUM SEEDS.—The current quotation is firmer at 10½d. per lb., spot.

RED ROSES.—Quoted at 6s. 9d. to 7s. per lb.

RHUBARB.—Rather more inquiry has been experienced, but spot values are unchanged. No shipment offers are forthcoming, and the prices given must be taken as nominal: spot, Shensi, best quality, 4s. 6d. to 5s.; old, slightly wormy, 3s. 9d.; shipment, f.a.q., 1s. 6d.; inferior, 1s. 3½d. per lb., c.i.f.

RUBBER.—Fairly active; values firmer: standard smoked ribbed sheet, spot, 7½d.; shipment, September, 7½d.; October-December, 7½d.; January-March, 8d.; April-June, 8½d.

SAFFRON.—Supplies of genuine Valencia difficult to obtain and prices firm at from 90s. to 95s. per lb., ex store.

SEEDS.—ANISE.—Spot, duty paid, Spanish, 57s. 6d.; Bulgarian, 38s.; Syrian, 37s. 6d. CANARY.—Quiet; spot, duty paid, Mazagan, 17s. 3d.; Morocco, 15s. 9d.; Turkish, 15s. 6d.; Plate, 15s. 6d.; Spanish, 24s. to 37s. 6d. CARAWAY.—Dutch, spot, 34s. 6d., duty paid, and 28s., f.o.b., Holland. CORIANDER.—Spot, old crop, 19s. 6d.; new crop, 18s. 3d., duty paid; prompt shipment quoted at 15s., c.i.f. CUMIN.—Spot, Malta, 48s., duty free; Morocco, 49s., duty paid, and 44s. 6d., in bond; Morocco, new crop, for shipment, 48s. 6d., c.i.f. FENUGREEK.—Morocco, spot, 12s. 6d., duty paid. New crop reported of poor quality and quoted at 9s., c.i.f. FENNEL.—Spot, Persian, 22s. 6d.; Indian, 26s. MUSTARD.—English, 22s. to 31s., according to quality.

SENEGA.—Following the arrival of first new-crop shipments, spot prices have eased, but forward prices are quoted firmer: spot, 1s. 10½d.; shipment, around 1s. 9d. per lb., c.i.f.

SENNA.—Business has been rather quiet, with prices remaining fully steady. LEAVES, Tinnevely: a few small consignments of new crop have been received, but the quality is not particularly good. Spot, fair green, No. 1, 5½d.; No. 2, 3½d.; No. 3, 2½d.; No. 4, 2½d. per lb. PODS, Tinnevely: spot supplies short, but best pale offered at 6d. per lb., and darker varieties at 3½d. to 4d. per lb., ex store; Alexandrian: no further shipments of finest bold hand-picked have been received, and spot stocks are now very low: selected, 5s.; No. 1, 4s.; No. 2, 3s.; No. 3, 2s. 3d. per lb.; old crop, 1s. to 2s. per lb., ex wharf.

SERPENTARIA ROOT.—The current quotation of good quality root, to arrive, is 4s. 6d. per lb., c.i.f.

SHELLAC.—Market quiet, with spot prices firmer after easing: spot, standard TN orange, 39s. 6d. to 42s. 6d.; for delivery, August, 39s. 6d.; October, 40s. 9d. (sellers); December, 41s. 6d. paid; sellers now asking 41s. 9d.; for arrival, August-September, 39s., c.i.f.

SLIPPERY ELM BARK.—Five-pound bundles offered on spot at 1s. 6d. per lb.

SQUILL.—White, new crop, is now to be had at 25s. per cwt., spot. Red, powder, quoted at 9d. per lb.

STRAMONIUM.—Good-quality leaves are available on spot at around 37s. 6d. per cwt. and upwards, as to quality and quantity.

TONKA BEANS.—The market is quiet, though fair frosted Para quality is in fair demand at 3s. per lb., ex store.

TRAGACANTH.—Business has been quiet and steady, with prices unchanged: finest selected white ribbon, £65; No. 1, white, £57 10s. to £60; No. 2, white, £50 to 54; No. 3, white, £35 to £42 10s.; amber leaf, £22; cleaned amber sorts, £16; brown to amber leaf, £11 10s.; red leaf, £9 to £10; hoggy, £6 to £7 per cwt., ex store.

WAXES.—A quiet, steady demand has been experienced, and prices are fully firm in all varieties; BEES' quoted unchanged: Calcutta, bleached, spot, 125s.; shipment, August-September, 117s. 6d., c.i.f.; ordinary quality, spot, 97s. 6d.; shipment, August-September, 92s. per cwt., c.i.f. Benguella, in bond, 90s.; shipment, August-September, 87s., c.i.f. Conakry, spot, 100s.; shipment, August-September, 87s. 6d., c.i.f. Dar-es-Salaam, spot, 97s. 6d.; shipment, August-September, 97s. 6d., c.i.f. CARNAUBA.—Market continues steady, moderate inquiry: fatty grey, spot, 152s. 6d.; afloat, 147s. 6d.; shipment, August-September, 146s., c.i.f. Chalky grey, spot, 152s. 6d.; afloat, 146s.; shipment, August-September, 144s., c.i.f. Primeira, spot, good quality, 195s.; f.a.q., 182s. 6d.; afloat, 177s. 6d.; shipment, August-September, 175s., c.i.f. Mediana, spot, 180s.; shipment, 175s. per cwt., c.i.f.

Essential and Expressed Oils, etc.

BUSINESS extremely quiet. Prices in the main are steady, but few show any firming tendency. In general buyers may experience easy markets.

ALMOND.—The market is quiet, but inclined to be a little easier than last week. English made, cwt. lots, 2s. 8d.; smaller parcels, up to 3s. 2d. per lb.; foreign, cwt. lots, 2s. 8d.; smaller parcels, up to 3s. 2d. per lb.; French, bitter, 6s. to 6s. 1½d. per lb.

ANISE (STAR).—There have been small arrivals during the week and spot prices are a shade easier, though not seriously threatened by the shipment position. Spot, leads, nominal; tins, 3s. 9d.; drums, 3s. 6d. per lb., ex store; shipment, August-September, leads, nominal; tins, 3s. 2d.; drums, 3s. 1d. per lb., c.i.f.

BERGAMOT.—While the Consortium price remains steady, there is no difficulty in obtaining old and blended oils at considerably cheaper prices. Consortium price, 14s. 9d. per lb., c.i.f., for bulk quantities; genuine new crop oil, 15s. to 15s. 6d. per lb., as to quantity.

BOIS DE ROSE.—Prices steady at the former levels. Brazilian, drums, ex store, 5s. 6d. per lb.; smaller repacked lots up to 6s.

CAJUPUT.—Spot prices continue steady at: B.P., 2s. to 2s. 4½d. per lb., as to quantity. Shipment prices slightly firmer.

CANANGA.—Quiet, unchanged. Spot, 4s. 10½d. to 5s. 6d., according to quantity and packing; shipment, 4s. 4½d. per lb., c.i.f.

CARAWAY.—Quiet, with dealers' prices continuing steady. Dutch rectified, 7s. 3d. to 7s. 9d.; crude, 6s. 9d. to 7s. per lb., as to quantity, landed and duty paid.

CEDARWOOD.—A limited amount of business is being transacted, without effect on the previous prices: African, in drums, 11½d.; smaller packages, up to 1s. 4d. per lb. American, in drums, 11½d.; smaller packages, up to 1s. 4d. per lb.

CINNAMON LEAF.—Small amount of business in Ceylon oil, repacked and filtered, at 2s. 4½d. to 2s. 9d. per lb., ex store; forward prices easy.

CITRONELLA.—Business has been slow, prices remaining steady. Ceylon, spot, drums, 1s. 5½d.; smaller parcels, up to 1s. 9d.; shipment, drums, 1s. 3d. per lb., c.i.f. Java, spot, drums, 1s. 10d. to 1s. 11d.; smaller parcels, up to 2s. 4d.; shipment, drums, around 1s. 4½d. per lb., c.i.f.

CLOVE.—Steady demand continues. English distilled oil quoted firmer: Madagascar, spot, drums, 2s. 9d.; repacked in small parcels, 3s. to 3s. 3d. English, distilled, 4s. 10d. to 5s. per lb., as to quantity.

EUCALYPTUS.—Prices ran somewhat easier during the early part of the week and in consequence a better demand was experienced. Spot, Australian, 70 to 75 per cent., tins, 1s. 4d. to 1s. 5d.; drums, 1s. 4d.; 80 to 85 per cent., drums, 1s. 9d. per lb., ex store, with higher prices for small lots; shipment, 70 to 75 per cent., tins, 1s. 2d.; drums, 1s. 1½d.; 80 to 85 per cent., 1s. 4½d. per lb., c.i.f.

GERANIUM.—Continues dull. The amount of business passing is small and shipment prices are easy at the figures named. Bourbon, spot, 11s. 7½d. to 12s. 4½d. per lb., as to quantity; shipment, 10s. to 10s. 3d., c.i.f. Algerian, spot, 12s. 9d. to 13s.; shipment, 11s. 7½d. to 11s. 10d. per lb., c.i.f.

GRAPE-FRUIT.—Steady average demand: California, 10s. 3d. to 12s.; Florida, 11s. to 12s. 6d. per lb., ex store, as to quantity.

HO (SHIU).—Prices remain steady in an inactive market. Spot, "improved" quality, 4s. to 4s. 1d.; "extra," in drums, 4s. 3d. per lb., ex store; shipment, "extra," 4s. per lb., c.i.f.

JUNIPER BERRY.—Quiet spot demand at prices from 3s. 3d. to 4s. per lb., according to quality and quantity.

LAVENDER.—No prices of new crop are available or expected for at least another week, but latest reports from the source indicate that the crop will be ample and of good quality, despite heavy frosts earlier in the season. Higher costs of production may, however, become responsible for firmer prices. Lavandin crop prospects are good, but lower prices are not to be expected while scarcity of Spanish spike continues.

LEMON.—The market for Sicilian is inactive, with buyers showing no interest at the present prices and sellers evincing no great concern at the lack of orders: Sicilian, spot, 11s. to 11s. 3d.; shipment, 10s. 4½d. to 10s. 9d.; machine made, 10s. 2d., c.i.f. Californian distilled, unchanged at 6s. 4d. per lb., in small drums, landed.

LIME.—Quiet and unchanged: West Indian, distilled, spot, 21s. to 22s. per lb., as to quantity.

MANDARIN.—No recent offers are reported, and the position thus remains unchanged from the prices last recorded, viz.: spot, 20s. to 22s. per lb., as to quality; shipment, 19s. to 20s., c.i.f., for highest grade oil; cheaper grades from 17s. 6d. per lb.

NEROLI.—Present quotations are around 24s. 6d. to 27s. 6d. per oz., as to shipper.

NUMEG.—Dutch and American oils quoted at 5s. 4½d. per lb. for bulk lots; smaller parcels, up to 5s. 9d. per lb.

ORANGE.—The demand has not been heavy and the prices of all varieties remain at the levels quoted last week: Californian, spot, one case, 2s. 8½d.; two or more cases, 2s. 6d.; large drums not quoted; small drums, 2s. 5d. per lb., landed; cold-pressed, 3s. 2d. c.i.f., in cases. French Guinean, spot, drums, 2s. 10½d. to 3s.; repacked oil, in tins, 3s. 2d. to 3s. 4½d. per lb., ex store; in bond, about 2s. 5d.; shipment, price from sources quoted at 2s. 5d.

PEPPERMINT.—The spot demand has been good, while Japanese prices are firmer, orders sent out being met with demands for 4s. 8½d. per lb. (August-September shipment). Spot, limited supply at 4s. 9d. to 4s. 11d., as to seller. American natural oil, in drums, is fully steady: quoted at from 2 dollars 25 cents to 2 dollars 35 cents per lb., c.i.f.

RAISIN SEED.—Unchanged: Californian, spot, 2s. 4d. to 2s. 6d. per lb., ex store.

ROSEMARY.—Spot values steady, business quiet. Spanish, 3s. to 3s. 7½d. per lb., as to quality and quantity; no shipment offers from source. Tunis, new crop, to come forward, 2s. 8d. to 2s. 10d. per lb., landed, as to quantity.

SANDALWOOD.—Genuine East Indian Mysore, in one-case lots, steady at 20s. 6d. per lb. Genuine East Indian, produced outside the province of Mysore, 18s. 9d. to 19s. 3d. per lb., c.i.f., in bulk quantities. English-made West Indian, 7s. 3d. per lb. Australian, steady at 15s. 3d. per lb., for 7-lb. tins; one case at 14s. 9d. and five cases at 14s. 6d. per lb.

SPEARMINT.—Unchanged: U.S.P. oil, spot, 9s. to 9s. 3d.; shipment, 8s. 4d. per lb., c.i.f.

WORMSEED.—Continues quiet and steady. U.S.P. oil, spot, 11s. 4d. to 11s. 6d.; shipment, 10s. 9d. per lb., c.i.f.

Trade-Mark Applications

(From "The Trade Marks Journal," July 27, 1938)

SCHEDULE III SPECIFICATIONS

"NEUVIDERM"; for skin preparations (3). By Ellentee, Ltd., 158 to 162 Oxford Street, London, W.1. 585,865.

"SULFORADO"; for sulphur preparations for scalp treatment (3). By Akciove Tovarny Na Vyrabeni Lucebnin Kolin, Kolin 11/54, Czechoslovakia. 584,358.

"MAGNOGENE"; for medicinal chemicals (3). By Laboratoires Romon, 11 ter Avenue de Segur, Paris, France. 584,867.

"ATHERA"; for preparations for high blood pressure and menopausal disorders (3). By Modern Health Products, Ltd., 38 Langham Street, London, W.1. 586,032.

"BEPLEX"; for all goods (3). By J. Wyeth & Brother, Ltd., Oldhill Street, London, N.16. 586,578.

"TYPHON"; for perfumes (48). By Etablissements Rigaud, 8 Rue Vivienne, Paris, France. 582,299.

"OMONELL"; for hair dyes (48). By F. R. Müller Gebrüder, 7 Alexander Strasse, Berlin C.25, Germany. 584,254.

"TANLO"; for all goods (48). By The Green Circle Products, Ltd., Alpine Street, Old Basford, Nottingham. 586,096.

"DIANA VERNON" AIDS TO BEAUTY across woman in period riding costume with falcon (words "Diana Vernon" disclaimed); for perfumery etc. (48). By Phoenix Proprietaries, Ltd., Ryland Road, London, N.W.5. 586,090.

"ERMINÉ"; for face creams (48). By Helena Rubinstein, Ltd., 24 Grafton Street, London, W.1. 585,161.

Correspondence

Correspondents may adopt an assumed name, but must in all cases furnish their real name and address to the Editor

The N.H.I. Contract

SIR,—Regarding the propositions for a renewal of the National Health Insurance contract, which the Executive of the National Pharmaceutical Union are putting forward (*C. & D.*, August 6, p. 124), why should chemists withdraw the special claim in respect of the 1937 epidemic? The medicines have been supplied during that epidemic, and there seems to be no reason why the chemist should not be paid for them. If the epidemics of 1936 and 1937 have not been accepted by the Ministry of Health for special consideration in regard to payment for medicaments (p.127), it would seem to be a case of bowing to the inevitable, but to couple up this withdrawal with a request for a new contract on a "no discounting" basis looks as though we are trying to bargain our loss of past money against the hope of full payment in the future. Although to get rid of the discounting clause would be a great satisfaction, it would only be an equitable adjustment; at the same time we must not forget that we have never admitted the present tariff rates to be adequate.—Yours truly,

DISCOUNT (6/8).

SIR,—Without a shadow of doubt the keenest interest in pharmaceutical affairs in the near future will centre on the negotiations pending between the National Pharmaceutical Union and the Ministry of Health regarding the new contract for Insurance dispensing. I see that there is to be a conference of Pharmaceutical Committees on September 21, and it seems fairly certain that the persistent spadework of the *C. & D.* in denouncing the discounting clause will have the effect of making a "no discounting" claim practically unanimous so far as any new contract is concerned. It must be of considerable satisfaction to you, Mr. Editor, to realise that by bringing forward the matter in season and out of season it now looks as if something might be done for the "handmaid of medicine," always provided, of course, that the views of the "hand-maids'" representatives can be sufficiently stiffened to withstand the arguments of Government departments. And while they are about it, why not insist on an increase in the present miserable dispensing fee?—Yours truly,

MALCONTENT (6/8).

Lord Horder's Outburst

SIR,—This "outburst" is a medical perennial. Experienced pharmacists are left cold; they have heard the same kind of thing too often from the lips of other eminent medical men, and the reply (or replies) are so numerous and so obvious that no one need bother much. This time, however, several have taken the trouble to remind readers of the daily Press that (a) doctors nowadays do not know how to prescribe, so have to resort to the handy proprietary, (b) the public has not now the same confidence in the medical profession, (c) the panel patient is so disgusted with the lack of courtesy on the part of doctors that he (or she) prefers to get a proprietary remedy (which often does as much good as the doctor), (d) doctors' fees are too high for even the middle classes, and so on. What interests me is whether the Horder outburst is not part of a vigorous advertising campaign to draw the attention of the public to the necessity for each individual to have a medical man allotted to him or her whom it will be obligatory to consult in sickness or in health. For "healing" is not the medical slogan now; it is "national fitness," and you are adjured that "the doctor's advice should be sought in every case, however trivial the ailment appears to be." The present campaign began some months ago and, sponsored by the British Medical Association, continues merrily in prominent spaces in daily papers. The annual meeting of the Association gave medical orators an opportunity to air their views and secure some further Press publicity, and this was rounded off by Lord Horder. With such a fine example of advertising technique before them, surely the Pharmaceutical Society should have something to say. The manufacturers of popular proprietaries—regarded as unethical perhaps—can take good care of themselves. An amusing commentary on what the general public thinks of the particular manufacturing company at which Lord Horder tilted in his speech was the fact that an offer on the Stock Exchange by this company of a million and

a half new shares was over-subscribed in an hour or two. It is evident, therefore, that, apart from the opposition of manufacturers, wholesalers, newspaper proprietors and others, there will be considerable resentment to be overcome among the public at large. Meanwhile, the discussion affords yet another opportunity for official pharmacy publicly to define the attitude of pharmacists to the subject, and to bring into public prominence the ethical nature of the pharmacist's calling.

Yours faithfully,

ICONOCLAST (4/8).

The Lay Press and the Conference

SIR,—I am glad to see that the *C. & D.* has been referring to the need of more Press propaganda regarding matters discussed at the British Pharmaceutical Conference. Past experience has shown the same old dismal records of the proceedings turned to coarse jokes at the pharmacists' expense. So much so that it leaves one wondering whether pharmacists in conclave have any voices at all, and communicate in deaf and dumb language. On the occasion when Mr. J. H. Thomas, as Colonial Secretary, attended the presentation of a chair from Australasian societies, he was described as the one-time poor boy who worked perforce in a chemist's dark cellar. Certainly not very edifying reading, nor that at a Conference meeting the pharmacists present could not provide an aspirin tablet for one of their colleagues. The jokes are puerile indeed, but the prevailing darkness in the public mind remains as to the work, duties and responsibilities of the pharmacist. Surely something better than this can be done. May I ask who writes these reports? Surely chemists are entitled to some respect or, in other words, "fair play."

Yours faithfully,

PHARMACIST (6/8).

All-purpose Remedies

SIR,—A proprietary medicine originally marketed, say, for digestive troubles, may in turn be advertised as a remedy for nervous disorders, sleeplessness, general weakness, and other ailments, and then to suit the demand of the moment it may be recommended as invaluable as an aid to slimming. It might be argued that these conditions may have some relation to one another, but a remedy which is so pliable in its adaptations should be classed with those prescriptions which we commonly term "blunderbuss," since they act on the hit-or-miss principle. How would one class a product which is advertised to make fat people thinner, and is also recommended to bring about an almost perfect state of bodily health and fitness—a state which, in the case of under-developed persons, would presumably be accompanied by an increase to normal size and weight?—Yours faithfully,

DEVELOPMENT (6/8).

Retrospect of Fifty Years Ago

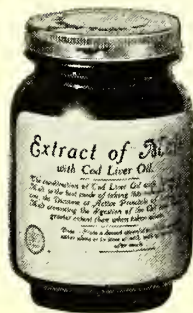
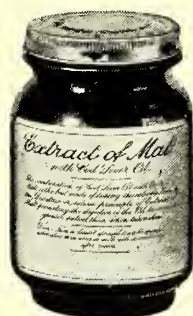
Reprinted from

"The Chemist and Druggist," August 11, 1888

Vaccination of Dogs

In this age of science made popular, it is astonishing to find a large number of dog-owners gladly paying half a guinea to the most illiterate pretenders to vaccinate their dogs as a preventive of distemper. This we could well understand if the animals were inoculated with a protective material or attenuated virus which, after producing a mild attack of distemper, would "protect" from the more virulent and always dangerous disease known as distemper. Such is not the case, however, nor is it pretended even by the blacksmiths and dog-doctors who carry on this lucrative profession. They simply prick the puppies two or three times with a lancet dipped in vaccine lymph, as if they were vaccinating a human being to protect it from smallpox. There is no similarity whatever between the vaccine variola of man and distemper of dogs. One might as well prick a soldier with a bayonet to prevent him getting shot.

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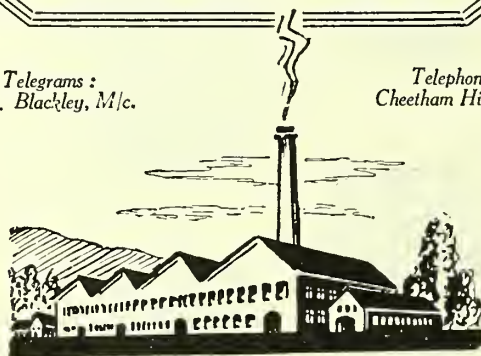
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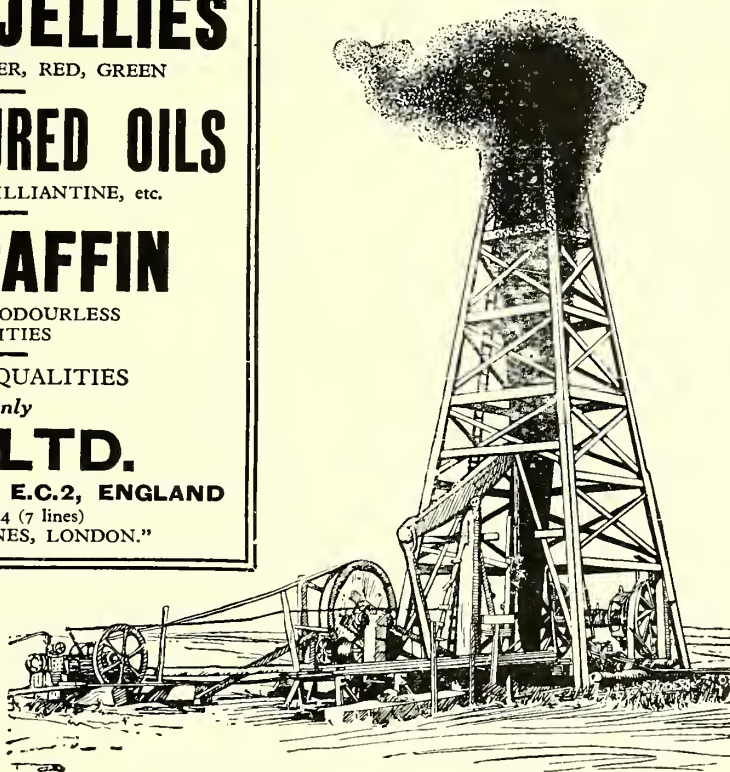
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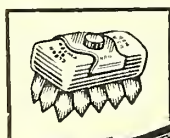
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**ONLY TOOTHBRUSH
WITH ADJUSTABLE
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& INTERCHANGEABLE
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6 for 6d. and 12 for 1/-
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GLUCOSE POWDER

In compressed Tablets.
Delightfully flavoured
per 6d. packet.

and other confections including
the incorporation of HALIBUT
LIVER OIL, physiologically
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INSIST



KEEP FIT Insist on
Simpkin's
100% GLUCOSE
CONFECTIONS

Write
A. L. SIMPKIN & Co., Ltd.

From 6d. per 1/2
FROM CHEMISTS
Samples gladly sent on
BARKLEY
WORKS (SHEFFIELD)



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100% GLUCOSE
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Energy-giving &
delicious and they
keep you from travel sick-
ness. Ask your chemist
for a 6d. packet 10-day.



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Get a 6d. packet from your chemist today.

Are you taking advantage of this advertising by stocking and displaying these delicious confections?

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IN A
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A REMARKABLE DOG MEDICINE
—Marketed only after wide test and approval by Dog Experts

A new discovery... An instantaneous success! Owners, Breeders and G.R.A. trainers report marvellous cures.

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TONIC FOR DOGS

**IS THE WORLD'S GREATEST REMEDY for
ECZEMA & MANGE
AND ALL SKIN DISEASES IN DOGS**

This is a line you can offer to dog owners knowing it will give RESULTS; a line that is good business to sell.

NOW READY in an 8-oz. size for Chemists
Trade (2-4 weeks' treatment according to size of dog)

**4/9
BOTTLE**

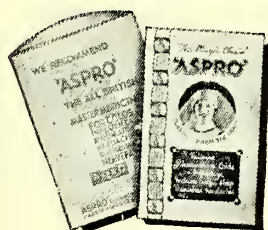
TRADE TERMS — LESS 33% TO CHEMISTS (3/2d. per bottle Nett)

Order now from:
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NEW USES for 'ASPRO' SEND UP THE SUMMER SALES



**CHEMISTS' ENVELOPES
AND BAGS**
Kristol Envelopes 2/6 per 1,000
Grease proof 2 oz. bags
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Cash with order.



GIANT CARTON

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Chemists know how good the demand is. But the chemist who gives 'ASPRO' a full and continuous display soon finds that he attracts the maximum sales created by 'ASPRO' advertising and gets many new customers from the great 'ASPRO'-buying public. Why not send for and

SHOW THIS SUMMER DISPLAY — and watch the Results!

'ASPRO' consists of the purest Acetylsalicylic Acid that has ever been known to Medical Science, and its claims are based on its superiority.

Made in England by
ASPRO LIMITED
SLOUGH, BUCKS.

Telephone: Slough 608

No proprietary right is claimed in the method of manufacture or the formula.



AVAIL YOURSELF OF THE 'ASPRO' BONUS — AND SAVE MONEY!

BONUS ON 5's & 10's ...	One gross order ...	Bonus 1 dozen packets
	Half gross order ...	Bonus 1/2 dozen packets
Half gross of either size is the minimum order accepted for bonus purposes.		
BONUS ON 27's ...	One gross order ...	Bonus 2 dozen packets
	Half gross order ...	Bonus 1 dozen packets
	Quarter gross order ...	Bonus 1/2 dozen packets

Quarter gross is the minimum quantity. **NO BONUS ON 60's.**

BONUS CONDITIONS.—The only conditions made are that the Chemist who buys on these terms undertakes to show 'ASPRO' advertising matter in his shop window for 14 days and sell at advertised prices. Acceptance of Bonus is considered acceptance of conditions regarding display and selling prices.

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gross outers suitable for display
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OF 3Costs: 2/6 Per doz.
(4 Boxes of 3)
30/- Per gross
(48 Boxes of 3)AGENTS WANTED IN
ALL PARTS OF THE
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1 RIGA STREET
MANCHESTER, 4PACKED OR
IN BULK**TABLETS**

(Compressed)

● Specialists for over 30 years in all kinds of Medicinal Tablets. Purity of Drugs and Accuracy of Dosage
Guaranteed. Let us put up your own Speciality in Tablet Form. Secrecy of Formula Guaranteed.**SPECIAL LINES—HEART SHAPE INDIGESTION TABLETS (IN GENERAL FAVOUR).**
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"CONDITION," "WORM," "DISTEMPER," AND "HYSTERIA."**JUNKET TABLETS (FARMHOUSE BRAND) A 6d. LINE.**
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Telephone: Canonbury 3401

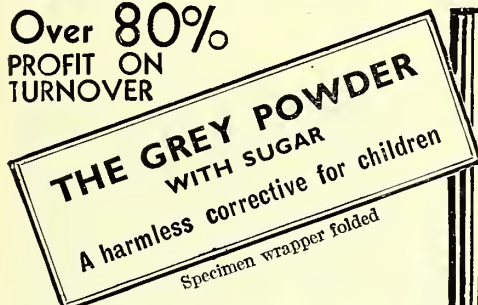
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of all kinds

PACKING CASES, CRATES, DRAINERS, etc.

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Grams:
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PROFIT ON
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	per gross
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POWDERS by the gross or by the 1,000's!**ROUSE BROS. (LONDON 1) LTD., 61 CHARLOTTE ST., W.1**

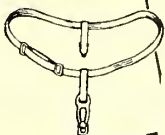
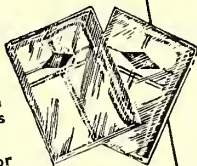
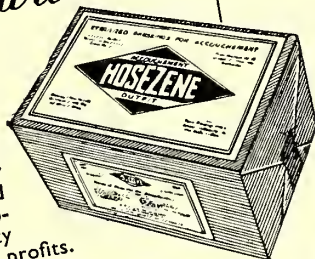
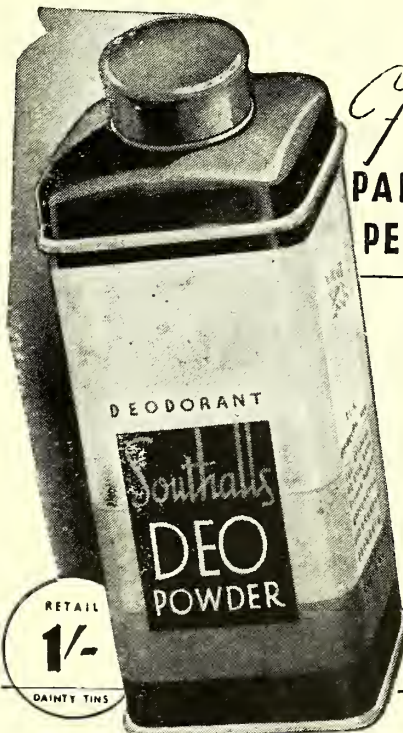
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HOSEZENE with confidence*High standards of manu-
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Cotton Wool are all pro-
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**PARTICULAR
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Sanitary
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DEODORANT
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It neutralises
body odours
at once.RETAIL
1/-
DAINTY TINS**ORDER FROM YOUR WHOLESALE HOUSE**

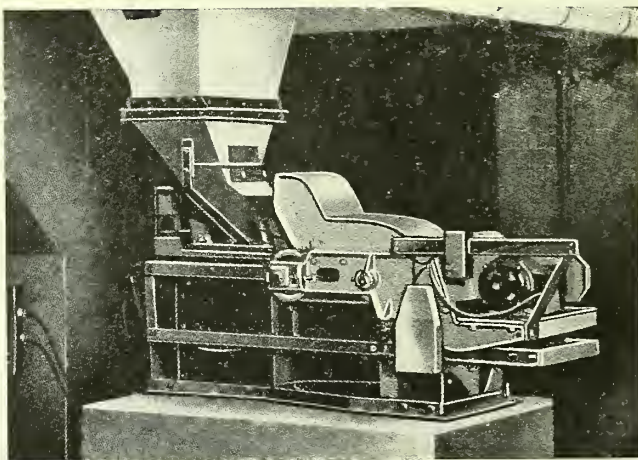
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and make it a super-accurate precision machine.

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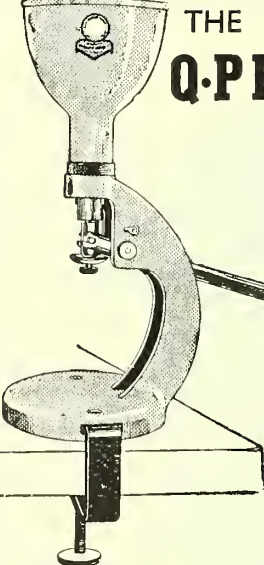
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This machine is exceptionally handy for making up experimental emulsions. It is compact and efficient and can be cleaned quickly without dismantling. Emulsion is rapid and stable, its capacity is unlimited yet 50 ccs. can be treated quite as well as larger quantities.

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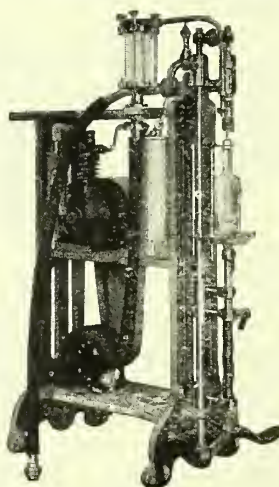
*This machine is entirely
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for Glass, Stone,
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Fills all sizes from
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Clean and Rapid
No Over Filling
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Easy to Clean
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NEW FIELD OF GLASS CONTAINER



Manufactured in best quality
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Can be supplied complete with
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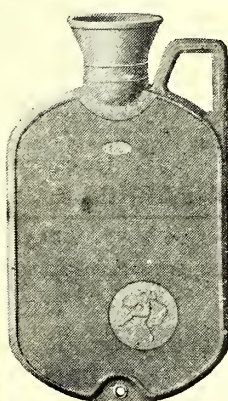
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RED, BLUE, GREEN

Colours
"DE-LUXE"
ORANGE, BLUE, GREEN
"BABY"
PINK, LIGHT BLUE



THE DOLPHIN JUNIOR
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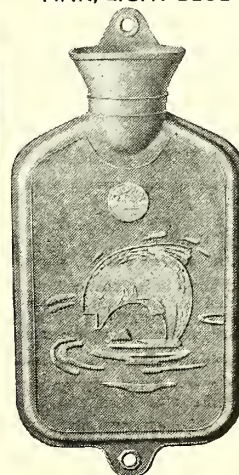
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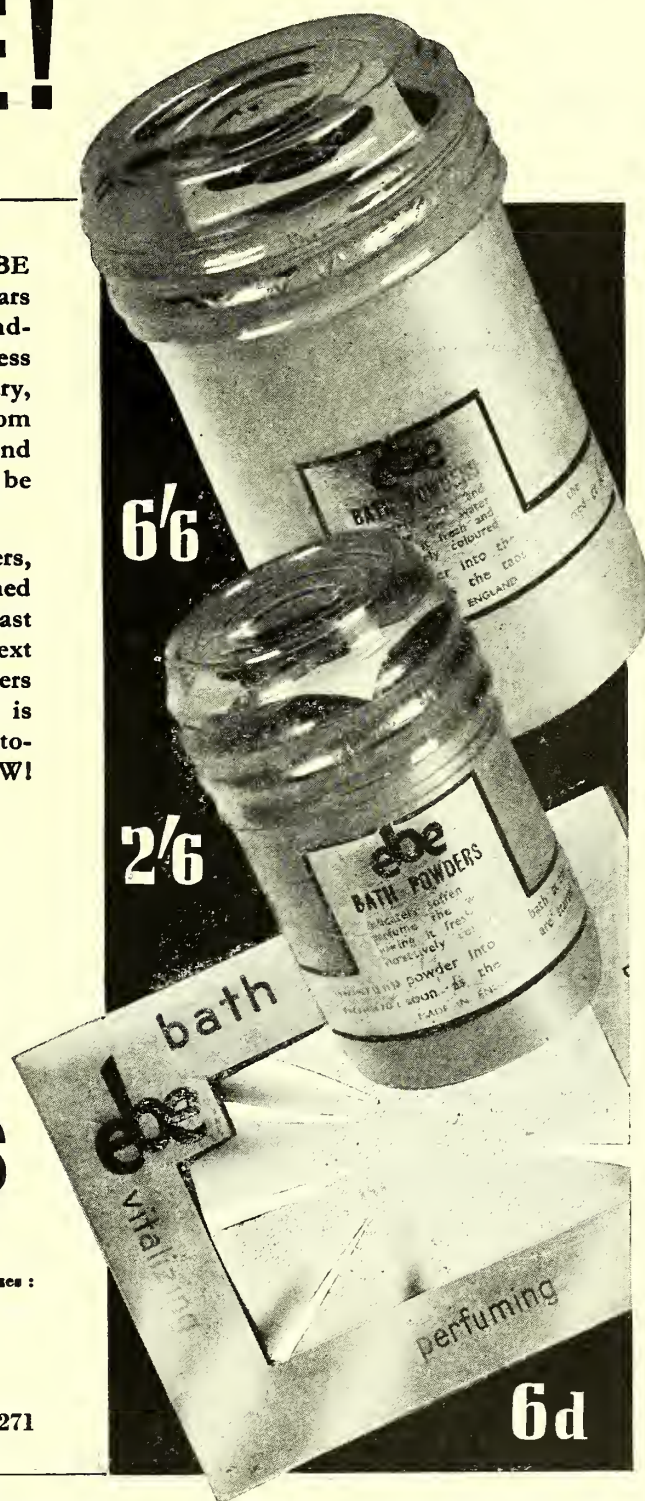
retail at 6d., 2/6, 6/6, 15/6, 25/-, 30/-, 60/-

You are advised to stock immediately the three popular sizes :

6d. - 2/6 - 6/6

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Compressed Air
FILLING MACHINE**

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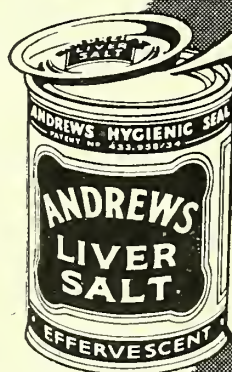
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OF HIGH VITAMIN POTENCY

also Halibut Liver Oil Capsules and Emulsion
Ask for samples and prices

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keep well stocked
with **ANDREWS**
—it's selling better
than ever this year

Armstrong's

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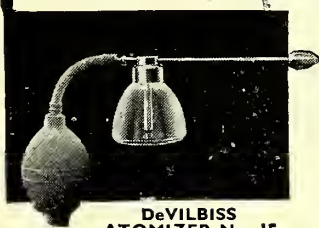
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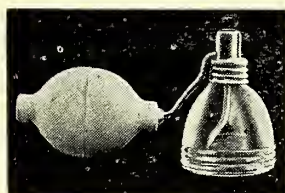
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AUGUST 13, 1938

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(C7) PRESTON.—Prominently situated Pharmacy of fairly recent establishment; now doing at the rate of about £1,000 per annum, and steadily increasing; good living accommodation; rent £52; price £600 all-at.

(C8) BURNLEY.—Old-established, with optical connexion; must be sold forthwith, and any offer considered; net profit for last financial year £330; rent £40; good scope.

(C9) EAST FINCHLEY (NEAR).—Established main road business with living accommodation, at present sub-let; turnover for year ended December, 1937, £2,572; gross profit £962; stock estimated at £1,000, all of which is good; fixtures about £280; price all-at, for quick sale, £1,530, or near offer, including only £250 for goodwill.

(C10) BERSHIRE.—Present returns approximately £2,000 per annum under management; good scope with personal attention; rent £100, including small house with garden and garage; lease 21 years; stock estimated at £700; fixtures £250; price £1,250 all-at; owner will, if necessary, accept £800 down and the balance by arrangement.

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(C13) LONDON, S.W. (RETIREMENT VACANCY).—Old-established business; turnover £1,300; net profit £418 including sub-let £78; rent £52; rates £28; £500 all-at will be accepted for quick sale.

(C14) CHESHIRE.—Situated on residential estate; turnover for 1937-38, £1,240 and increasing; excellent living accommodation; property can be purchased; stock £320; fittings £200; purchase price £700.

(C15) KENT.—Village Pharmacy; no opposition; population 2,700; up-to-date modern, corner shop, also seven-roomed house with private entrance and laid out garden; price for stock, fixtures and goodwill approximately £900.

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FOR AUSTRALIA.—Agency, sole selling rights or licence of first-class Pharmaceutical Factory desired by married couple (wife, Doctor of Medicine) with long experience in scientific propaganda and selling Pharmaceutical Preparations; capital and first-class references available. Please reply 332/143, Office of this Paper.

SUB-AGENTS wanted in all parts of the country for the sale of German Vacuum Flasks in original cases to Retail Chemists and Drug Stores; commission only. Apply with references, stating ground covered, 332/153, Office of this Paper.

WANTED.—A well-known Wholesale house to introduce specially packed brand of Digestive Tea; the line is prepared solely for sale in Chemists' shops and hermetically sealed in cellophane cartons to ensure perfect freshness; sole selling rights in United Kingdom extended to suitable firm of Wholesale Chemists prepared to distribute nationally; every possible assistance given to ensure big sales and development. Apply, Dominion Tea Plantation Co., Ltd., Dominion House, Liverpool.

TENDERS

COUNTY COUNCIL OF MIDDLESEX PUBLIC ASSISTANCE DEPARTMENT

TENDERS FOR DRESSINGS, SURGICAL APPLIANCES, SURGICAL INSTRUMENTS, ETC., BASIC DRUGS, B.P. OR B.P.C. PREPARATIONS; PROPRIETARY DRUGS, SERA, NITROUS OXIDE GAS, OXYGEN, ETC.; PATHOLOGICAL REQUISITES; X-RAY, LIGHT AND RADIUM REQUISITES (SIX MONTHS).

The County Council of Middlesex invites tenders for the supply of the above goods or materials for the period stated from the 1st October, 1938, to its several Hospitals, Institutions, Sanatoria, Children's Homes, Offices, etc.

Forms of tender (upon which only tenders will be considered) and conditions of contract, may be obtained on application to the Director of Public Assistance "L.I." 3 Central Buildings (Fourth Floor), Matthew Parker Street, Westminster, S.W.1, accompanied by a stamped addressed foolscap envelope.

Sealed tenders, marked "Tender for ——" must be delivered at or before 11 a.m. on Thursday, the 1st September, 1938, addressed to "The Clerk of the Middlesex County Council, Guildhall, Westminster, S.W.1."

The Council does not bind itself to accept the lowest or any tender, and reserves the right to accept any tender or part only.

Estimated quantities required are stated in the form of tender, and tenderers may tender to supply all or any one or more of the Establishments concerned.

C. W. RADCLIFFE,
Clerk of the County Council.

Guildhall, Westminster.
August, 1938.

DIRECTORSHIPS

OPPORTUNITY occurs for Qualified Chemist as Director of small Private Company; salaried position and management of new main road shop 20 miles from London; small investment. 332/152, Office of this Paper.

APPRENTICESHIP

COUNTY BOROUGH OF HALIFAX HEALTH DEPARTMENT

STUDENT APPRENTICE in the DISPENSARY AT THE HALIFAX GENERAL HOSPITAL

A PPLICATIONS are invited from GIRLS, not under 16 years of age, for the above appointment; applicants should have the Preliminary Scientific Examination Certificate of the Pharmaceutical Society.

A premium of £25 will be required to be paid to the Council.

The Apprentice will be bound to the Council for a term of three years at the following remuneration:—

1st year	10/- per week.
2nd year	15/- per week.
3rd year	20/- per week.

Copies of Application Forms, together with further particulars of the appointment, may be obtained from the undersigned, and must be returned not later than first post on 27th August, 1938.

(Signed) G. C. F. ROE,
Medical Officer of Health.

Health Offices,
Powell Street,
Halifax.

VACANCIES for two Apprentices, one day, one evening; seven to midnight. Write, Marsons, 123 Baker Street, London, W.1.

SITUATIONS OPEN

RETAIL (HOME)

6s. for 40 words or less; 1d. for every additional word.
(Box No., 1s. extra.)

BIRMINGHAM.—Smart Qualified Manager wanted for busy shop in main road; middle-class trade; good display man with ability to build business. Write 332/149, Office of this Paper.

EALING.—Junior Assistant (male) required, September 4; one who has had experience in good-class Dispensing and Retail business. Apply by letter, with full particulars, age, height, experience and salary required, to W. A. Weston, 29 New Broadway, Ealing, W.5.

ESSEX.—Qualified Junior Assistant wanted at once; permanency. Also Unqualified Assistant till October. 6/5, Office of this Paper.

GUILDFORD.—Experienced Lady Assistant required; able to Dispense and take charge of Surgical Counter; permanency to capable woman. Write 332/150, Office of this Paper.

LONDON (City).—Unqualified Male Assistant required immediately, permanency (age 24-30). Full particulars, apply Monday between 9.30 a.m. and 6 p.m., Hancock & Co., Ltd., 144 Fleet Street, E.C.4.

LONDON, W.—Pharmacist of mature experience for all-night duty; good salary and ample time for rest; references and character must bear the strictest investigations. Also Qualified Man for relief work from now till end of September. 332/151, Office of this Paper.

LONDON, N.—Smart Junior Male Assistant required for Dispensing and Photographic business. Apply, giving particulars of age, height, experience, salary required and photograph (to be returned), 6/43, Office of this Paper.

LONDON, W.1.—Qualified Assistant required, starting September 9; full-time. Write full details experience, age, photo, etc., P.C.B. 291/31, Office of this Paper.

LONDON, W.1.—Qualified Assistant wanted; good appearance; good Salesman and Dispenser. Apply with full particulars giving age, height, salary required; enclose photo if possible. 6/18, Office of this Paper.

LONDON, W.1.—Young Qualified Assistant required; smart at Counter and Window-dressing. State usual particulars. Applications not answered in 7 days respectfully declined. 6/49, Office of this Paper.

OXFORD.—Young married Pharmacist required for middle-class branch; living accommodation available over Pharmacy; salary and commission offered; interview necessary at Oxford. Send fullest particulars all experience, together with photo; state when free, Bellamys, Ltd., 22A Merton Street.

SHEFFIELD.—Unqualified Assistant (age 28-30) required for a high-class Dispensing business; good Counterman and Window-dresser. Apply, with full particulars of experience and references (photo if possible), 6/25, Office of this Paper.

SOUTHAMPTON.—Unqualified Assistant required for good-class Dispensing and Counter; single preferred (age 22-30). Full particulars, salary, experience, etc., 6/2, Office of this Paper.

SOUTHWOLD (Suffolk).—Small Seaside town; Unqualified male Assistant required from about September 10. State age, height, experience and salary required, A. E. Sawyer, M.P.S., 100 High Street, Southwold.

SURREY.—Qualified Lady or Gentleman required immediately; must be good Salesman and Dispenser; for Family business; permanency if suitable; comfortable position; small N.H.I. All particulars in first application. 7/2, Office of this Paper.

TUNBRIDGE WELLS.—Manager wanted for single-handed branch. Also Junior Assistant. Men with first-class Dispensing experience essential. Write, giving full particulars and salary expected to A. E. Hobbs, Ltd., 33 Mount Pleasant, Tunbridge Wells.

WIMBLEDON.—Qualified man required as soon as possible; good Salesman and Stock-keeper (age between 23 and 35); good opening for keen, conscientious worker; Photographic knowledge useful. Also opening for Junior man. Apply, with full particulars, Durbins, Chemists, 12 The Broadway, Wimbledon, S.W.19.

ASSISTANT, Young, Unqualified, for good-class Retail and Dispensing Business; permanency; London district. Send full particulars to 6/23, Office of this Paper.

CHEMIST.—Wanted, capable Qualified Branch Manager, Burntisland. Write, stating age, experience and salary required. Applications not answered seven days respectfully declined. Envelopes to be endorsed B/M and addressed to S.C.W.S. Retail Drug Department, 187 Bognoor Road, Shieldhall, Glasgow.

COMPETENT Lady Assistant required; South Coast; one thoroughly experienced in all branches and requiring a permanency. Please give full particulars and copies of references in first letter. 7/1, Office of this Paper.

EXPERIENCED Lady Assistant (age 25 to 30) required; good Dispenser and to help with Book-keeping; must be quick and willing. Apply, Lewis Wing, Ltd., Regent Street, Weston-super-Mare.

IMMEDIATE APPOINTMENT AVAILABLE IN GOOD-CLASS PHARMACY.—Young man (about 21), commence as Junior Assistant; must be reliable Dispenser and Salesman; prospects for a good man; full particulars, with photograph if possible, by return. George's, Chemists, Lee Green, London, S.E.12.

J. WEARING, Pharmacist, Woking, requires a young, experienced, Unqualified Assistant for high-class business; this is a comfortable berth for a suitable candidate; give full particulars as to age, salary, references, etc.

JUNIOR Assistant (male) required for September 12; permanency; one just out of apprenticeship preferred. Apply, with full particulars of experience and salary required, W. N. Ashworth, Chemist, High Road, Byfleet, Surrey.

LADY, Qualified, manage branch shop, pleasant district, 25 minutes from London; good wages and commission. Patterson, Chemist, Claygate, Surrey.

PART-TIME man wanted for N.H.I. Dispensing on Monday, Tuesday and Friday evenings, 6-8, and Saturdays, 6-9. Apply, Pasco, 57 Hackney Road, Shoreditch, E.2.

PROGRESSIVE position for Young Qualified Man in Retail business and production of Proprietary lines; must be a tactful Salesman. J. B. Tillott, 70 Marsham Street, S.W.1. Telephone: Abbey 1487.

QUALIFIED Assistant and Unqualified Locum wanted immediately, either sex. Apply Friday morning, Ripley Webb, Ltd., 32 Stuart Road, Peckham Rye, S.E.15 (tram terminus). Phone: New Cross 4028.

QUALIFIED Assistant for West End Pharmacy; one who has had experience in good-class Dispensing and Retail; good prospects. Apply "K," 332/154, Office of this Paper.

QUALIFIED Assistant wanted as soon as possible; smart young man newly qualified for Counter, Dispensing and general all-round duties; salary £4 per week. Apply with full particulars of age, experience, references, to 6/21, Office of this Paper.

QUALIFIED Man (under 30) required shortly for progressive business, S.W. London; permanency, with view to management later for suitable man. Please state age, height, details of experience, salary required and when at liberty in first letter; photo (returnable) if convenient. 6/29, Office of this Paper.

QUALIFIED Manager (25-35 years), for medium-class business; would have complete charge; really good prospects for keen, go-ahead salesman; moderate salary to commence. Murray & McConachie, Ltd., 1 City Road, Winchester.

QUALIFIED Young Lady or Gentleman required for medium Cash and N.H.I. business. Please state age, experience, salary required and when disengaged. Mitchell, Chemist, 6 Lewisham Road, Lewisham.

THE BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL.—Applications are invited from registered Pharmacists for the position of Dispenser, part of whose duties would be of a clerical character. The successful candidate would be required to live out. Federated Superannuation Scheme in force. Applications stating salary required, particulars of experience and accompanied by copies of three recent testimonials to be addressed to the Secretary immediately.

TIMOTHY WHITES & TAYLORS require several Managers in London and South of England for supernumerary duties in first instance. Permanent appointments later to suitable men. Apply, giving full particulars of past experience, etc., to Retail Staff Manager, 70 Vauxhall Bridge Road, London, S.W.1.

UNQUALIFIED Assistant required before end of September for middle-class business; permanency for efficient man who must be good Dispenser and keen Salesman. Pleasant working conditions. Apply or write, T. H. Wilson, 741 Barking Road, Plaistow, E.13.

UNQUALIFIED Assistant with good Dispensing experience wanted; Window-dresser and smart Counter man. State experience, salary required and when available; enclose photograph. W. H. Green (Chemists), Ltd., 28 Earl Street, Coventry.

UNQUALIFIED Junior Assistant (Male) required at once; good Counterman and accurate Dispenser; no Sunday or half-holiday duties; permanency for suitable man. References and salary required to Managing Director, Lovett & Bones, Ltd., Hertford Street, Coventry.

UNQUALIFIED Junior Assistant required for branch at Kettering; must have had good training and used to high-class business. Apply, stating age, salary required, references, and enclose photograph, P. Jeyes & Co., Ltd., The Drapery, Northampton.

UNQUALIFIED Junior Assistant for a first-class Dispensing and Light Retail business; gentlemanly young man who has recently terminated his Apprenticeship preferred; good experience offered. Give full particulars and salary required in first letter. C. Gilling, Pharmaceutical Chemist, Sunningdale.

UNQUALIFIED Junior Assistant required (Lady or Gentleman), accustomed to quick Counter and N.H.I. Dispensing; early September. Please give all particulars in first letter (important!) of experience, age, education, salary, etc., to Wood, Pharmaceutical Chemist, 351 High Street, West Bromwich.

UNQUALIFIED Lady Assistant required for Counter, Window-dressing and general shop routine in good-class business; some experience in cosmetics preferred. Apply by letter with references and salary required to W. K. Winfield, Solihull Pharmacy, Solihull, Birmingham.

WANTED immediately, Junior Assistant or Improver for High-class Pharmacy. Reply, stating age, experience, wages required and enclosing photograph, to W. Bates & Co., Ltd., 50 Oxford Street, Southampton.

**ALL MANAGERS AND ASSISTANTS
SHOULD JOIN AT ONCE**

The National Assoc. of Chemists' Assistants

INCORPORATED IN THE CHEMICAL WORKERS' UNION

**BENEFITS: Trade Protection, Legal Aid, Unemployment Benefit,
Free Use of Employment Bureau**

WRITE FOR PARTICULARS: Arthur J. Gillian, Gen. Sec.,
149 Newington Causeway, London, S.E.1

WANTED, Junior Assistant (Male), Unqualified, to commence duties August 29. Please state full particulars in first letter. Letters unanswered in four days respectfully declined, John, Chemist, 118 Cowley Road, Uxbridge, Middlesex.

WANTED.—Qualified Chemist for Dispensing and Counter; usual duties; no Sunday. Give usual particulars, state salary, or arrange interview. Bow Drug Stores, Ltd., 39 Devon's Road, E.3.

WANTED.—Qualified Manager for high-class business in centre of large Lancashire town; good Pharmacist and organiser to increase returns. State age, height, experience, salary required, and when free; photo. 332/146, Office of this Paper.

YOUNG Lady, Junior or Improver, wanted for good-class Chemist-Optician's business in West End of London; hours 8.30-6.30, Saturdays 1 p.m.; no Sunday duty. Apply in first instance to Percy Cheetham, 133 Canterbury Road, Margate.

£4 4s., London; Junior Chemist required immediately; exceptional opportunity for good-class experience; steady progress for go-ahead man. Apply, giving particulars, to 332/148, Office of this Paper.

VACANCIES FOR LOCUMS

BRIGHTON.—Qualified relief (Lady or Gentleman), required for 2 weeks from September 8 next. Apply, 6/14, Office of this Paper.

MANCHESTER.—Locum, Qualified, wanted for 3 or 4 weeks, about August 15 (assistant kept). Please give usual particulars to 249/9, Office of this Paper.

LOCUM, Qualified, wanted, August 29 to September 12 inclusive (or give free dates); must be reliable. State salary. Ost, Chemist, St. Albans, Herts.

LOCUM required at once for about a month; Qualified or Unqualified, male. Apply Quibell, 885 Finchley Road, Golders Green, N.W.11. Phone Speedwell 1976.

QUALIFIED Locum required, one week from August 15. Phone AMH. 2795. 6/46, Office of this Paper.

QUALIFIED Locum required September 3 to 17, both dates inclusive; £6 per week; no half-day or Sunday duty; hours 8.30 a.m. to 6 p.m., Thursday 1 p.m., Friday 7 p.m., Saturday 8 p.m.; fare paid one way. Usual particulars, A. F. Thomason, Campden, Glos.

QUALIFIED Manager for first fortnight, or longer, in September. Apply, with references and salary required, to Meyrick & Davies, Ltd., Wilton Court Pharmacy, Bexhill-on-Sea.

UNQUALIFIED Locum, either sex, required from August 29 to September 17 inclusive. Apply with full particulars to Howarth, Chemist, Stevenage, Herts.

WHOLESALE

D. MAWDSLEY & CO., Manchester, require experienced female Pricing Clerk for Sundries and Patent Medicines, Typing and general experience an advantage. State age, wage required, and full details.

LEADING London Wholesale Druggists and Pharmaceutical Manufacturers require young Representative for Lancs and West Riding. Applications will be considered only from those with thorough knowledge of Drug Trade and live connexion in the territory named; own car an advantage. 332/145, Office of this Paper.

MANUFACTURERS require Agents for London and Provinces to sell quality Bath Crystals on good commission. When replying, please state territory worked at present, lines handled and age to 332/156, Office of this Paper.

MANUFACTURERS require young Qualified Representative for Medical Propaganda in London; previous experience desirable. Write, fullest particulars and salary required, 331/140, Office of this Paper.

MEDICAL PROPAGANDA.—A well-known organisation marketing Biological Products require the services of an educated Representative for Medical Propaganda in London; must be Qualified and possess a thorough knowledge of Biological Therapy; connexion with Hospitals and Public Health Departments an advantage. Applicants should state age, qualifications, experience and salary required. 332/144, Office of this Paper.

PIONEER SALESMAN, successful with new lines, required for Special Work by well-known company selling Branded Products through the Chemist trade; evidence of having successfully introduced new lines essential; must be single and prepared to work in any territory, and must have sound knowledge of selling advertised Proprietaries; this is a job for a self-reliant man with a good record, and carries adequate salary and also commission, expenses, etc.; must drive a car. Apply in detail with a record of experience, stating fully all relevant particulars, age, etc., to 332/142, Office of this Paper.

QUALIFIED Man as Representative for old-established firm, to call on Doctors, Hospitals, Chemists, in Yorkshire; Leeds as centre. Give full particulars and salary required to 332/155, Office of this Paper.

REPRESENTATIVE for London, to call on Chemists, wanted by Manufacturers of a well-known advertised Proprietary line; only gentlemen of highest integrity need apply; car and first-class experience essential; good salary, commission, and excellent prospects for the right person. 331/137, Office of this Paper.

REPRESENTATIVES to call upon Chemists for important Wholesale Distributors marketing well-known branded articles; good salary and allowances; excellent prospects and permanency for right man with connexions. Full particulars, with previous experience, to P.C.B. 289/26, Office of this Paper.

SALES Representatives required for the disposal of Veterinary lines to Farmers, etc. Apply, 331/110, Office of this Paper.

SMALL Company require the services of a Representative; a small salary and a good commission will be offered for the first month, after which attractive terms will be offered if satisfactory; we do not require the representative until September 19, when he will be asked to commence for us at the Chemists' Exhibition, where we have a stand; good prospects for the right man. Write, stating previous experience, 331/138, Office of this Paper.

SITUATIONS WANTED

RETAIL (HOME)

**2s. for 18 words or less; 1d. for every additional word.
(Box No., 1s. extra.)**

A SENIOR Pharmacist, London and West End experience, requires similar position or Executive or Managerial; staff control. Locum, 6/33, Office of this Paper.

ASSISTANT, referred Ph.C., requires temporary post; capable Dispensing, Photographic and Counter; North preferred, but not essential; salary £3. Imrie, 11 Allerton Grange Drive, Leeds, 7.

ASSISTANT, Unqualified (40); excellent Dispenser, Counterman and Window-dresser; abstainer; highest credentials; free. T. S., 18 Wharfedale Gardens, Thornton Heath, Surrey.

EXPERIENCED Qualified man (32); references; free September 12 to 24. Phone Willesden 2504. Taylor, 8A Grove Road, N.W.2.

LADY Dispenser (Hall) requires post as Dispenser-Bookkeeper or Dispenser-Chauffeuse to Doctor in or near London; 3 years' experience. 5/4, Office of this Paper.

MANAGER (39) seeks permanency; free 22nd; interview Sundays, from London to Watford area. 332/147, Office of this Paper.

M.P.S., F.S.M.C., D.B.O.A., requires Managership, good-class business; 24 years multiple and private Chemists; keen worker; good Salesman; expert Refractionist (O.B.A.C. Register). 6/12, Office of this Paper.

PHARMACIST, Silver Medallist (28), exceptional experience, good Staff Manager, desires Hospital or Works situation; position responsibility preferred. 6/20, Office of this Paper.

QUALIFIED (60), active, registered O.B.A.C.; finishing Locum Tenency September 12; desires permanency; absolutely reliable; good Refractionist. Ellis, 20 Bounty Street, New Bradwell, Bucks.

QUALIFIED, disengaged; 8 years London Manager; guarantee increased turnover. Telegrams or letters, Eucalite, 23 Constance Street, Silvertown, E.16.

QUALIFIED (40), ex-proprietor, reliable, experienced all branches; London or Birmingham districts; free September 12; moderate salary. 6/34, Office of this Paper.

QUALIFIED Manager (34), married, seeks progressive permanency; fully experienced; competent; highest references; 6 years present position; free September 25, subject to usual notice; Surrey or Kent area preferred. 6/15, Office of this Paper.

QUALIFIED (45), married, desires progressive position as Manager; over 25 years' all-round experience; active and reliable; permanency or locum. 6/51, Office of this Paper.

RETAIL or Wholesale; many years' experience. Margaret Williams, 22 Albany Road, Stroud Green, N.

SHORTLY.—As Managing Superintendent, where other staff kept; large experience; salary and shares; pharmacist, etc. 6/1, Office of this Paper.

UNQUALIFIED (age 40), experienced all branches; London and Harrogate. Gibbs, 234A Camden Road, N.W.1.

UNQUALIFIED Junior, well recommended, hard worker, requires situation; speciality in Counter work and Photography. Sullivan, 107 Tredegar Road, Bow.

UNQUALIFIED married gentleman, experienced, competent, desires permanency, Assistant, Manager Drug Stores or Clerical work; Wales preferably; excellent references. 4/7, Office of this Paper.

UNQUALIFIED (44), single; fully experienced; as Assistant or Manager; recently managing London branches; Midlands preferred, but not essential; free mid-September. Baldwin, c/o 59 Heybridge Avenue, S.W.16.

YOUNG Qualified Pharmacist desires further good-class Retail experience as Assistant; moderate salary if prospects good; North or Midlands preferred. 6/37, Office of this Paper.

£5 SECURES the Services of a First-class Manager and Business Builder; thoroughly experienced in all branches of Retail Pharmacy and Photography; excellent references; capital available and willing to consider situation with view to succession. H. S., 81 Chapel Street, N.1.

LOCUMS SEEKING ENGAGEMENTS

LOCUM work required from September 19; male; Unqualified; soundly experienced; reliable references. Barnes, 62 Galveston Road, Putney, S.W.15.

PHARMACIST, Locum; free August 22 for 2 or 3 weeks. Pharmacist, 118 Durham Road, Feltham, Middlesex.

WHOLESALE

ADVERTISER (29), well educated, seeks opening, any capacity, in Wholesale; 14 years' Retail Pharmacy experience; thorough Veterinary and Photographic knowledge. Cooper, Penshurst, Penvensey, Sussex.

CAPABLE, energetic, conscientious Registered Pharmacist (age 32), with 13 years' Retail experience, requires responsible executive post; sales propaganda department of Wholesale house preferred, but not essential. 250/14, Office of this Paper.

EXPERIENCED Representative (37), connection amongst Chemists, Co-ops., Stores; Derbys., Notts, Yorks, the North; seeks advancement. 322/160, Office of this Paper.

GENT (29), now in retail, seeks position with firm of repute as Representative; personality, integrity, plus efficiency; connexion in Midlands; own car. 6/6, Office of this Paper.

IRELAND.—Young Qualified Irish Chemist, University trained, wishes to represent English Firm or Medical Propaganda work; excellent knowledge Therapeutics, Sera, etc.; gentlemanly appearance; well connected with Chemists and Doctors. 233/4, Office of this Paper.

MANUFACTURER of Toilet and Cosmetic preparations seeks post; accustomed to buying, control of stock, dispatch and general factory routine. 6/38, Office of this Paper.

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REPRESENTATIVE (40), keen, well-spoken, desires position with firm of repute; wide experience Chemists' and Miscellaneous lines; also high-class Retail experience; present position 17 years; own car; Midlands preferred. 6/3, Office of this Paper.

STOREKEEPER seeks situation, 14 years' experience in Institution and Wholesale Chemists; knowledge of Tablet-making and general Dispensing, laboratory work, etc.; excellent references. 331/132, Office of this Paper.

TABLET-MAKER, all-round knowledge; 20 years' experience; Granulating, Compressing, Coating, knowledge of Pill-making; disengaged; go anywhere. 6/59, Office of this Paper.

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MISCELLANEOUS

10s. for 60 words or less; 1s. for every additional 10 words or less. (Box No., 1s. extra)

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FOR DISPOSAL.—200 Dozen $\frac{1}{2}$ min. Clinical Thermometers, Maglense (Smith & Co.), 6s. per doz., 6-doz. lots; delivered free, cash with order. Enquiries to Bargains Unlimited, 278 Dalston Lane, Hackney, E.8.

IDEAL CHEMIST SHOP FIXTURES and Fittings, New, Second-hand and Shop-soiled, to be selected from our varied stock, at advantageous prices. Carboys, Shop Rounds, Cash Registers, Tills, Scales, Dispensing and Personal Weighing Machines. Courteous attention will be afforded any enquiry, large or small. Your inspection is cordially invited. Send your requirements to RUDDUCK & CO., 219 Old Street, London, E.C.1.

SECONDHAND FITTINGS.—Complete set of mahogany fittings including Shop Rounds, Mortars and Carboys. All at one quarter to-day's price. Can be seen at, or full particulars from, PHILIP JOSEPHS & SONS, LTD., 90/92 St. John Street, Clerkenwell, E.C.1. Phone, Clerkenwell 4111/2. "Pharmacy Fitters for over a Century."

TREBLES for New and Second-hand Fittings, Alterations, Shop Fronts, Glass Cases, Dispensing Screens, Counters, Drawers, Service Trays, Window Fittings, Wall Cases. Send your requirements. 549 Lea Bridge Road, Leyton, London, E.10. Phone: LEY. 2370.

WANTED for Cash, Chemists' Stocks, also Surplus Goods and Manufacturers' discontinued lines of every description. Bargains Unlimited, 278 Dalston Lane, Hackney, E.8.

£2—COMPLETE CHEMIST FITTINGS at any price you wish to pay. We have erected in our showrooms a Complete Chemist's Shop with Metal Shop Front, Window Backs, Correct Window Lighting, Signs and Modern Interior Fittings. Apply for Lists, D. MATTHEWS & SON, LTD., "The Liverpool Shop Fitters," 14 and 16 Manchester Street, Liverpool. Est. 1848.

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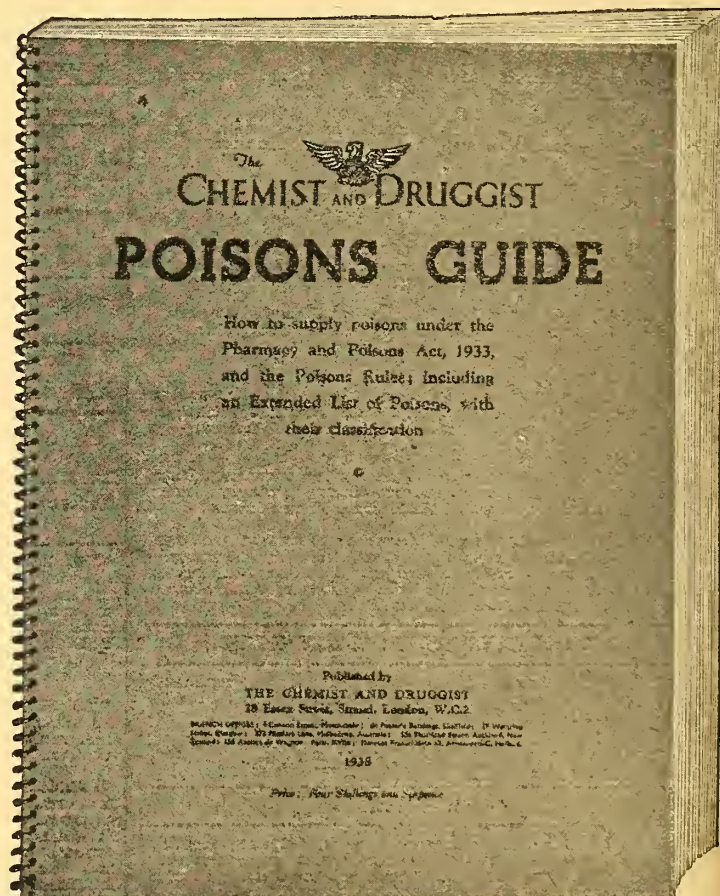
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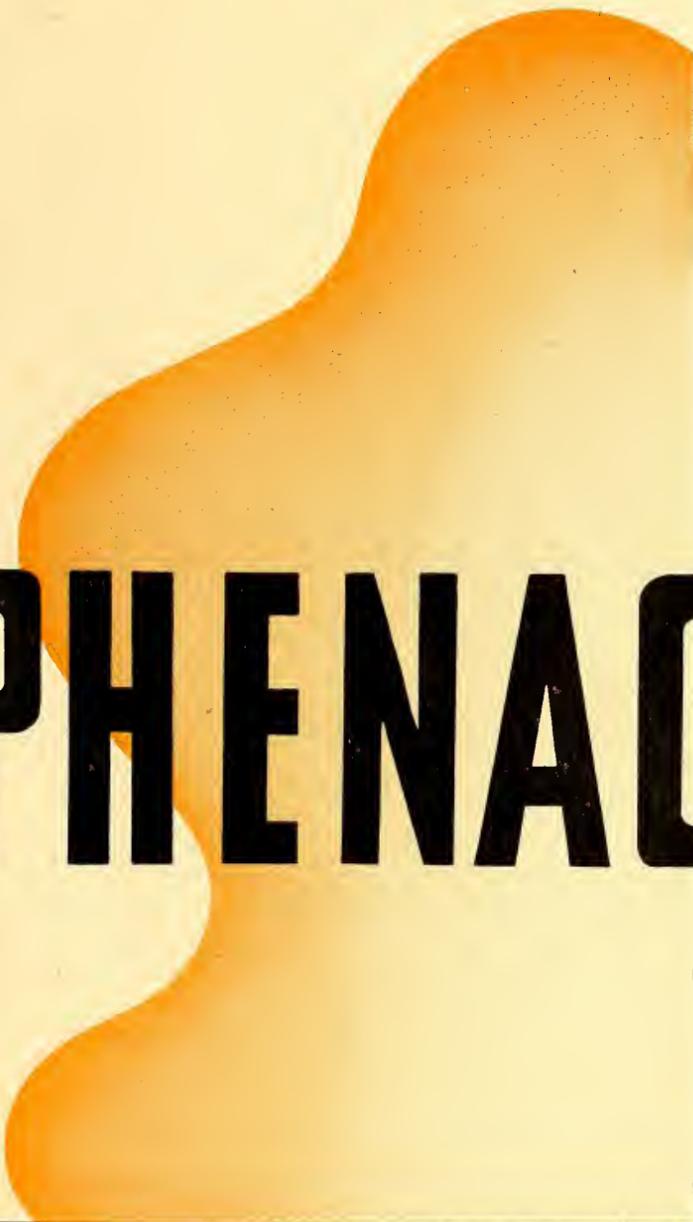


THE CHEMIST AND DRUGGIST, 28 Essex Street, Strand,
LONDON, W.C.2

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